SPACES OF REFUGE: REVITALIZATION THROUGH THE

TEMPORARY REUSE OF HONOLULU'S INTERSTITIAL SPACES

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Abstract

Honolulu's urban fabric is filled a vast amount of untapped potential in the form of interstitial space that is currently being underutilized. With the large scale developments that will come with the construction of Honolulu's rail transit system, the number of these spaces will grow. The spaces are often taken for granted and seen as waste: surface parking lots, open lots, construction debris, vacant city landscape and street medians. These developments will cater mainly to the middle to upper-middle class demographic. In the site selection for this project, the demographic focus are the people that have been left behind by these developments. There is a strong link between poverty, urban potential and the impact of people's well-being due to the inability for Hawai'i's people to make ends meet. The aim of this research is to find a possible method to map these spaces and finding the appropriate function based on the resources in the selected sites. The intervention designed from this research will be based on characteristics appropriate for these interstitial spaces and the chosen demographic: temporality, flexibility and constructability.

Alongside the mapping of interstitial spaces, the resources mapped include care and essentials, recreational activities, arts and entertainment, cafes, fresh produce, restaurants, nightlife, relaxation and retail. Based on these resources, the appropriate program or function was chosen to fill the need for these resources.

The mapping investigation of Honolulu's interstitial spaces and its resources reaffirmed that the current planning process does evolve as fast as the city changes. The design hopes to give citizens the voice and power to implementation policy and regulation changes regarding interstitial spaces can positively affect the socioeconomic factors and quality of life.

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1 Introduction

1.1 Interstitial Potential

The urban fabric is filled with a vast amount of underutilized space that has the potential to fill large pockets of void within the urban fabric of Honolulu. The potential of these spaces lies within these interstitial spaces that are often taken for granted and seen as waste: surface parking lots, open lots, construction debris, vacant city landscape and street medians. Unfortunately, these hidden treasures remain lost until a developer or community decides to realize their potential. The current development trends for our public urban spaces primarily focus on private property owners. This creates spaces of sterility that are highly controlled and consumer driven. Coined by Mike Lydon, tactical urbanism is a term used to define projects "relating to small scale actions serving a larger purpose and adroit in planning or maneuvering to accomplish a purpose in instigating the appropriation of a public owned, neglected site with a local community."[1]

1.2 Intervening the Interstitial

The interventions proposed by this dissertation take place on sites within the Honolulu urban fabric that due to major changes in transportation infrastructure, will undergo intense developmental change to its neighborhoods and urban spaces. Contemporary thinkers and scholars have expressed the importance of having the public participate and engage in the process of creating public spaces, which helps to foster responsibility for the 'commons' amongst residents and produce awareness of their own rights to the city by having them become a more engaged part of the democratic decision making process. My research begins by examining both the social aspects of the city and the negative results of our conventional city development planning methods and linking that with tactical urbanism as a response to disrupt conventional development methods by creating temporary mobile interventions within underutilized spaces in the city that have been appropriated for public focused needs. The interest in this study began with a curiosity in the interventions themselves, which then transformed into the impact and the potential implications on our urban economy, subculture, planning policy and spatial theory of the city. The goal of this research is to answer the question, "Do informal temporary

[1] Lydon, Mike, and et al. 2012. "Tactical Urbanism." Issuu.

interventions significantly impact urban society, community development processes and urban culture? The reason for this question is due to the current trend of using these urban interventions as a “trendy” and “hip” means to attract social attention, much of which is for capitalistic opportunities and monetary value. Rather than using interventions as a means to sell more things, the focus of this research is to study the potential value of developing interstitial spaces in ways that will positively impact the community. Much of the research looks towards theories on tactical urbanism and rights to the city for examples that can bring insight to, and understanding of our community’s social behavior and processes.

The role of the city designer is to instigate change and provide suggestions towards specific goals and the desired outcomes for the community. For the chosen sites in Honolulu, my goal as a designer is to revitalize the socioeconomic characteristics of these sites by reclaiming the underutilized interstitial spaces of its urban core. This is done by planning for the current and future needs of residents, providing alternatives to existing restrictions in place and engaging the residents by creating productive uses of urban space.

By injecting these interstitial spaces with temporary mobile interventions, designers can stimulate the interests of its citizens, address their desires and question irrelevant policies implemented by the government, thereby giving the residents an opportunity to create new uses of these spaces. Scenarios will be created presenting different possible programs for the chosen sites, representing a catalyst for greater social, economic and cultural growth. The programs were chosen based on the current and future needs of the residents, including urban fabric changes resulting from rapid development. Appropriating the interstitial spaces of the urban fabric provide residents with the opportunity to extend what they claim as “home” to spaces outside of their physical living spaces.

The design and use of interstitial space facilitate the creation of interventions that positively impact the social fabric of the urban spaces within the city. They are intended to bring about awareness to the fact that it is not the large extravagant changes done by developers that will make the urban fabric more vibrant, but rather the maintained activity and presence of the members of the city that will make the city more comfortable to be in. The goal of these interventions, as Henri Lefebvre had argued, is as much about enabling the users of the city through accommodating

enjoyment and creativity as it is about fulfilling the ideals through projects that reinforce the notion of ownership and responsibility within the shared urban spaces.[2]

1.3 Defining Interstitial

The definition of interstitial space, as mentioned in the previous section, differs in various contexts. In the medical context, the word interstitial is an adjective used to define a part of anatomy describing the gaps and spaces in a tissue or part of an organ within the body. These “interstitial” tissues vary in size such as spaces between arteries or organs to the tissue between individual cells. Based on this definition, one can make an analogy for the urban infrastructure, like the organs of the body, are the functioning elements of the city.

For this dissertation, interstitial space refers to the spaces that exist in the “in-between”; spaces that are left over, unused and underutilized, due to various reasons such as zoning laws, land use regulations or difficulty of development. Some examples of these include the spaces between commercial buildings, surface parking lots, boundaries or spaces that interrupt the flow of activity. For architects, interstitial space is the connection that binds the experiences and everyday lives of people, changing the way we perceive and inhabit the city.

1.4 Approach

The objective of this dissertation is to understand the interstitial spaces within the urban core of Honolulu; the way it is created and the way it makes us feel. This investigation of the interstitial will create a catalogue in order to framework an approach to intervene in these spaces. There are a number of different types of interstitial spaces within the city and the definition varies in different fields. The goal of this dissertation is not to address all types of interstitial space but will deal with organization as a driver to program and transform the uninhabitable to habitable.

The methodology of this study will be through the collecting and organizing of data from the sources available (government institutions, user-generated data, non-profit organizations, etc.) in order to locate interstitial spaces within the selected sites within Honolulu’s urban core. They will then be categorized into spatial typologies in

[2] Purcell, Mark. "Citizenship and the Right to the Global City: Reimagining the Capitalist World Order." International Journal of Urban and Regional Research 27.3 (2003): 564-90. Web. <http://faculty.washington.edu/mpurcell/ijurr.pdf>. 578.

order to create a lens through which the complexities of space, use and mapping of the urban image may be better understood. These spaces will then be categorized by their characteristics, defining elements, proximity to adjacent functions, distance from necessary resources or services, and lastly, current intentional and unintentional uses.

This catalogued matrix of interstitial spaces will provide an opportunity to find patterns of use and needs, leading to the discovery and inspiration of possible program types for mobile interventions in that site. Mobile interventions play a large role in this dissertation. By focusing on a single site, the opportunity to develop stronger connections within the community as a whole is lost. Individual spaces fail to form a solid approach to mitigating and resolving the larger socio-economic, economic and infrastructure issues. Approaches to connecting networking all the parts of the urban fabric aspire to bring together the community are needed.

Through the literature review and mapping analysis, I hope to bring awareness and understanding of how different people experience various types of spaces within their community that have the potential to elevate the social, economic and cultural aspects of the community. The dissertation as a whole will look to answer the question: how can the abandoned interstitial spaces be used most effectively to help the community and in what ways can these interventions be used to protect social and economic diversity.

2 Interstitial, Urbanism and Theories

2.1 Rights to the City

As we move forward, scholars, activists, planners and citizens have been drawn to the idea of the "right to the city" through progressive interventions. This idea has also presented itself in international organizations as a means to combat social inequality. Lefebvrian theory goes into much depth on this idea and seeks to take control of the process of production of space within the urban fabric.[3]

The Lefebvrian theory of the right to the city can be traced back to the writings of Henri Lefebvre and his ideas of the social production of space. His works have deeply influenced urban theory and have sparked discussions around the notion of spatial justice. In his book, *The Production of Space,* Lefebvre points out that the spaces within the urban fabric are open to be exploited and the production of these spaces are a process in which conceptions, perceptions and experiences of space interact with each other.[4] He argued that the proper uses of these spaces stated by government authorities are powerful, but not to the point that it is impossible for its citizens to enact change; these spaces are always available for appropriation.[5]

For Lefebvre, the spread of capitalism resulted in the increasing level of disenfranchisement of urban dwellers. As a result, in order to reverse the process, Lefebvre called for the right to the city that involves a spatial approach to social and political struggles with the participation of those who live in that city.[6] According to Lefebvre, the right to the city allows all citizens to participate in the use and creation of these urban spaces. [7] Mark Purcell states that there are two essential points that lie within Lefebvre's notion of right to the city. These two points are appropriation and participation. Participation is the right of urban dwellers to take on a role within

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[3] Lefebvre, Henri. 2003. The Urban Revolution (Translated by Robert Bononno). Minneapolis:
University of Minnesota Press
[4] Lefebvre, Henri. 1991b. The production of space. Oxford, OX, UK; Cambridge, Mass., USA:
Blackwell. 20.
[5] Ibid, 21.
[6] Dikeç M (2001) Justice and the spatial imagination. Environment and Planning A 33:1785-1805
[7] Purcell, Mark. 2008. Recapturing Democracy: Neoliberalization and the Struggle for Alternative Urban Futures. New York: Routledge.

the process of creating urban space. Appropriation, on the other hand, involves the process of capital accumulation that is centered-around the increasing value of these spaces through the application of value-forming labor.[8] Control over the production of these spaces meant control over social and spatial relations. As a result, the social value of the urban space would weigh equally to its monetary value.[9] According to Purcell's analysis of Lefebvre's writings, when economic systems value the urban space mainly for its exchange value, the potential of the production and growth of urban life is severely suppressed. [10]

In order to combat this suppression of urban life, Lefebvre offers what he calls "autogestion". He defines it as a particular form of the withering of the state into a form of collective, decentralized, grassroots political, economic self-management and democracy with some kind of 'state' institutional architecture. [11] Purcell agrees with Lefebvre's doctrine, stating that the key is to bring people together to oppose the supremacy of the state and multinational capital. [12] Only through autogestion can the people who live within the urban areas take control of their own life, in such a way that it becomes their own work that is truly their own. Purcell also highlights the importance that Lefebvre put on the concept of autogestion.[13] Purcell notes that for Lefebvre, "the most important of these areas is the state. Autogestion in that context means people managing collective decisions themselves rather than surrendering

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[8] Purcell Mark. 2002. Excavating Lefebvre: The right to the city and its urban politics of the
Inhabitant. GeoJournal 58:99-108

[9] Purcell, Mark. 2008. Recapturing Democracy: Neoliberalization and the Struggle for Alternative Urban Futures. New York: Routledge.

[10] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.

[11] Lefebvre, Henri. 2009. State, Space, World: Selected Essay, Neil Brenner, Stuart Elden, eds.
Gerald Moore, Neil Brenner, Stuart Elden trans. Minneapolis: University of Minnesota Press. 16.

[12] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.

[13] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of U
rban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.

those decisions to a cadre of state officials".[14] Such autogestion insists on grassroots decision-making and the decentralization of control to autonomous local units. According to Purcell, removing the state out of its powerful role as manager requires regular people to reach their full potential as urban inhabitants.[15]

In his book, *Critique of Everyday life*, Lefebvre defines the most significant of his concepts. He defines everyday life as the interchange between "illusion and truth, power and helplessness; the intersection of the sector man controls and the sector he does not control". [16] What he means by this is that the 'everyday' is defined by the space in which all life occurs. To Lefebvre, everyday life was an unexplored realm compared to technology and economic productivity and that capitalism is transforming everyday life and its spaces into a space of consumption.

A critique of this sector of everyday experience shared by everyone in society, regardless of class or race, according to Lefebvre, can lead to people understanding and then revolutionizing their everyday lives. [17] This is essential to Lefebvre because everyday life is where he saw capitalism surviving and reproducing itself. Without revolutionizing everyday life, capitalism would continue to wear away at the quality of this experiential space. The critique of everyday life was crucial because it was "…for him only through the development of the conditions of human life—rather than abstract control of productive forces—that humans could reach a concrete utopian existence". [18]

In David Harvey's view, a key task for critical or "revolutionary" urban theory is to "chart the path" toward alternative, post-capitalist forms of urbanization.[19] By taking

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[14] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.
[15] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.
[16] Lefebvre, Henri. 1991a. Critique of everyday life. London; New York: Verso. 40.
[17] Elden, Stuart. 2004. Understanding Henri Lefebvre: Theory and the Possible. London; New
York: Continuum. 14.
[18] Elden, Stuart. 2004. Understanding Henri Lefebvre: Theory and the Possible. London; New
York: Continuum. 13.
[19] Harvey D (1976) Social Justice and the City. London: E. Arnold. 314.

an economic view of Lefebvre's theory of right to the city, Harvey claims that since the creation of surplus is what drives the capitalist system, social movements should focus on gaining control of the this production. In his book, *Rebel Cities: From the Right to the City to the Urban Revolution,* he emphasizes this by arguing, "to claim the right to the city in the sense I mean it here is to claim some kind of shaping power over the processes of urbanization, over the ways in which our cities are made and re-made and to do so in a fundamental and radical way".[20] Compared to Lefebvre, Harvey pays more attention to the fundamental political economic contradictions in the capitalist accumulation process in his argument that "Patterns in the circulation of surplus value are changing but they have not altered the fact that cities...are founded on the exploitation of the many by the few". [21] He focuses on the process of accumulation by dispossession, which does not simply occur at the primitive stage of capitalist development, but at various stages of capitalism to supplement existing cycles of accumulation. [22] With his interpretation of the contemporary urbanization as a spatial fix to the crisis in the accumulation of capital, the right to the city is not merely about expanding inhabitants' access to the city in quantitative terms but about being part of the process to make cities qualitatively different. In this regard, the demand for the right to the city should be about gaining "greater democratic control over the production and utilization of the surplus".[23]

Since the inception of the right to the city idea, a number of groups have taken this idea and used it as their own. Many social movements by various political alliances and international organizations have used it in various ways to serve as kind of umbrella for all types of political and social demands that generally address the problem arising in urban areas today.[24] Again, Purcell states that in all aspects, in all

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[20] Harvey, David. 2012. Rebel Cities: From the Right to the City to the Urban Revolution. New
York: Verso. 2.
[21] Harvey D (1976) Social Justice and the City. London: E.Arnold. 314.
[22] Harvey, David. 2008. "The Right to the City." New Left Review, no. 53 (October). II: 34.
[23] Harvey, David. 2008. "The Right to the City." New Left Review, no. 53 (October). II: 37.
[24] Schmid, Christian. 2012. "Henri Lefebvre, the Right to the City, and the New Metropolitan
Mainstream." In Cities for People, Not for Profit: Critical Urban Theory and the Right to the City, 42–62 Neil Brenner, Peter Marcuse, and Margit Mayer (eds.). London; New York: Routledge.

versions of these movements, importance is placed on the user, the urban dweller. Based on this idea, it is agreed that the 'everyday' experience of living within the urban fabric gives the city user the right to the city. Thus, these treatments of the theory place importance on use value of urban space over its exchange value.[25]

The challenging question when it comes to the topic of right to the city is 'whose' rights count. Peter Marcuse's reinterpretation of Lefebvre idea understands the right to the city as involving "an exigent demand by those deprived of basic material and existing legal rights, and as aspiration for the future by those discontented with life as they see it around them, perceived as limiting their own potentials for growth and creativity".[26] In much of his writings, Marcuse makes the distinction using economic and cultural terms to define whose right we need to protect and expand. Economically, the deprived are classified to include the excluded and the working class itself. In cultural terms, Marcuse puts emphasis on expanding the right of the directly oppressed and the alienated.[27] Other than those mentioned, much of the ruling groups, business people, capitalists, and the political elite for example, are thought to have already acquired the right to the city through their power, as also mentioned by Harvey.[28]

Marcuse and Harvey answer what kind of city the right to the city idea promises. It is not the right to the existing city that is demanded, but a future one.[29] Marcuse emphasizes that it is not a city, but actually a whole society. [30] Harvey also proposes

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[25] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.
[26] Marcuse, Peter. 2009a. "From Critical Urban Theory to the Right to the City." City 13 (2-3):
185–97. doi:10.1080/13604810902982177. 190.
[27] Marcuse, Peter. 2009a. "From Critical Urban Theory to the Right to the City." City 13 (2-3):
185–97. doi:10.1080/13604810902982177.
[28] Harvey, David. 2008. "The Right to the City." New Left Review, no. 53 (October). II: 23–40. 38.
[29] Marcuse, Peter. 2012. "From Critical Urban Theory to the Right to the City." In Cities for
People, Not for Profit: Critical Urban Theory and the Right to the City. Brenner, Neil, Peter Marcuse, and Margit Mayer (eds). London; New York: Routledge.
[30] Marcuse, Peter. 2012. "From Critical Urban Theory to the Right to the City." In Cities for

something similar to that of Marcuse. He makes the distinction that it is far more than a right of individual access to the resources that the city embodies. Rather, it is the right to change ourselves by changing the city based on "more after our heart's desire".[31]

The perspective of the right to the city has been around for some time, but it is yet to be translated into fully established urban practices. It is important to seek strategies that follow the various urban contexts, as the forms and shapes of the struggle for the right to the city should be imagined by taking into account the local configuration of institutional regulatory structure as well as the contradictions within specific political economic systems. As Mustafa Dikeç states, "approaches to, and principles of, justice are time and space specific".[32] Therefore, any discussions about identifying the emancipatory right to the city and organizing its corresponding movement should address this spatio-temporal specificity. With the need to involve marginalized urban populations and form a solidarity that encompasses conventional class-based labor movements, the right to the city movement becomes a struggle that strives to secure access not only to urban space but also to "political space", while being sensitive to specific urban socio-political, economic and institutional contexts.[33]

Like Mustafa Dikeç discusses, Don Mitchell also tries to tie the 'right to the city' theory entails the development of a fully urban society. Mitchell focuses on the argument that the city itself is a work in which all of its citizens must participate.[34] According to Mitchell, the rights that we accept as granted, such as the right to assemble in and use urban space, are relatively new achievements. Additionally, these urban spaces are constantly contested and only grudgingly given by those who

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People, Not for Profit: Critical Urban Theory and the Right to the City. Brenner, Neil, Peter Marcuse, and Margit Mayer (eds). London; New York: Routledge.

[31] Harvey, David. 2008. "The Right to the City." New Left Review, no. 53 (October). II: 23–40. 23.

[32] Dikeç M (2001) Justice and the spatial imagination. Environment and Planning A 33:1785-1805. 1788

[33] Dikeç M (2001) Justice and the spatial imagination. Environment and Planning A 33:1785-1805. 1790.

[34] Mitchell, Don. 2003. The Right to the City: Social Justice and the Fight for Public Space. New
York: Guilford Press.

hold power.[35] He notes that in the city in which we live that Lefebvre writes about is inherently alienated from most city residents. The city is not so much a site of participation, but rather one of "expropriation by a dominant class (and set of economic interests)" that is uninterested in making the city a place of exchange of difference.[36] Increasingly public space is being produced for us rather than by us. He argues that inhabitants must re-appropriate urban space through a process of political mobilization that struggles for grassroots control of the production of urban space.[37]

These scholars all share the view that an understanding of right to the city true to Lefebvre calls for an alternative, post-capitalist form of urbanization. They differ in how they approach it. For David Harvey, an economistic approach focusing on gaining control of the production of space. Peter Marcuse, on the other hand, looks closely at what `type of city right to the city promises and who deserves this right. Mitchell places a strong emphasis on the place of public space in right to the city. Unlike the scholars covered above, Purcell emphasizes Lefebvre's insistence on a more "holistic understanding of social life one that is always attentive to the many aspects of human experience".[38] He notes that the manner in which Lefebvre attempted to achieve this was by basing his analysis on peoples' actual experiences, which cannot be reduced to specific factions of life, like income and consumerism.

2.2 Tactical Urbanism

In the twenty-first century, cities worldwide must respond to population change, shifting economic conditions, new technologies, and a changing climate. One thing has remained the same, however, whether dominated by a centralized or dictatorial state, vestiges of feudalism, or more freewheeling "urban mercantilism," although

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[35] Mitchell, Don. 2003. The Right to the City: Social Justice and the Fight for Public Space. New
York: Guilford Press. 15.
[36] Mitchell, Don. 2003. The Right to the City: Social Justice and the Fight for Public Space. New
York: Guilford Press. 18.
[37] Mitchell, Don. 2003. The Right to the City: Social Justice and the Fight for Public Space. New
York: Guilford Press. 18.
[38] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of
Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034. 6.

the masses lived the everyday streetscape, planning and design have been largely in the hands of elites. Whether apparently public and social (ordering, sanitizing, beautifying) or more unabashedly private and capitalistic (facilitating development or trade), the planning and design goals of these elites have ultimately been motivated by control and wealth.[39]

Tools such as tactical urbanism were created to combat this. Short-term, community-based projects are becoming a powerful and adaptable tool that citizens can use to create lasting improvements in their city. Tactical Urbanism offers a way to gain public and government support for investing in permanent projects, inspiring residents and civic leaders to experience and shape urban spaces in our city. In his book, Mike Lydon defines tactical urbanism as an intervention with the following characteristics:

- "A deliberate, phased approach to instigating change."
- "The offering of local solutions for local planning challenges."
- "Short-term commitment and realistic expectations."
- "Low-risks, with possibly high reward."
- "The development of social capital between citizens and the building of organizational capacity between public-private institutions, non-profits, and the constituents."[40]

Guerrilla crosswalks, community gardens, self-made street signage and parklets are examples of street interventions that are often temporary additions to urban fabric that aim to make the city more livable or enjoyable. Scholars such as Jeffrey Hou have lauded this technique as an effective way to spark needed improvements in the city.[41] Traditionally, the scope of organizations like parks and recreation and urban design firms are increasingly becoming interested in shaping public space; whether because of a perceived lack of action on the part of their city governments or to add uniqueness and character to a neighborhood.[42]

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[39] Fishman, Robert, ed. 2000. The American Planning Tradition. Washington, DC: Woodrow Wilson Center. 6.
[40] Lydon, Mike, and et al. 2012. "Tactical Urbanism." Issuu. http://issuu.com/streetplanscollaborative/docs/tactical_urbanism_vol_2_final.
[41] Hou, Jeffrey. 2010. Insurgent Public Space: Guerrilla Urbanism and the Remaking of
Contemporary Cities. New York: Routledge.
[42] Hou, Jeffrey. 2010. Insurgent Public Space: Guerrilla Urbanism and the Remaking of
Contemporary Cities. New York: Routledge.

The studio Rebar, who uses and implements tactical urbanism in their work, defines it as the use of modest or temporary revisions to urban space to seed structural environmental change.[43] The studio believes that their use of tactical urbanism is based on a belief that deep organizing structures (social, cultural and economic) have a two-way relationship with the physical environment as in "they both produce the environment and are reproduced by it".[44]

Tactical urbanism involves a diversity of approaches. It refers to temporary activation initiatives of a variety of property types, built and un-built (i.e., undeveloped spaces), it also involves activation along built retail corridors, involving informal actors implementing unorthodox solutions to maintain activity within vacant storefront properties for short periods of time.[45] Such initiatives bring together local stakeholders, represented by community organizations, the creative community, small business start-ups, hobbyists, cottage industries as well as the owners of the vacant properties. Together, these participants seek to enhance or stabilize the vibrancy of a neighborhood in a local, grassroots, and small-scale manner.[46]

Much of what is seen today derive themselves from literature about tactical urbanism. Much of these serve as handbooks and how-to guides for urban design, characterized by their community-focus and realistic goals. One of the most widespread of the strategies used is the annual *Park(ing)* Day, in which parking spaces are turned into temporary park spaces. The event grew rapidly, expanding to more than 200 parks in 2007 and was featured in the 2008 Venice Architecture Biennale. By 2011 PARK(ing) Day included almost 1,000 parks in 35 countries. PARK(ing) Day has spread beyond the event itself. As well as parklet programs, the first of which was introduced in San Francisco in 2010, participants have gone on to

[43] "Rebar Art & Design Studio | San Francisco | Art, Design and Ecology." 2014. Accessed Oct 22. http://rebargroup.org/.
[44] Merker, Blaine, and Jeffrey Hou. 2010. "Taking Place: Rebar's Absurd Tactics in Generous Urbanism." In Insurgent
Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities. Routledge.
[45] Lydon, Mike, and et al. 2012. "Tactical Urbanism." Issuu. http://issuu.com/streetplanscollaborative/docs/tactical_urbanism_vol_2_final.
[46] Lydon, Mike, and et al. 2012. "Tactical Urbanism." Issuu. http://issuu.com/streetplanscollaborative/docs/tactical_urbanism_vol_2_final.

develop a range of related events – from the skipsters[47] of Melbourne to the temporary villages of Montreal to the worldwide Better Block movement. These guides provide a much needed framework for understanding how to make these interventions work and bringing them to the masses. The goal is not to simply accomplish an interesting project that will be cleaned up by the city or thrown away, but to make something – even something temporary – that will change how a place works and is perceived. Once that change has been made, to determine how it can be replicated or made permanent, a catalyst for future change in an area. Tactical urbanism's spatial focus resonates with the right to the city by attempting to claim neglected urban spaces for community use. The question of what kind of "right to the city" leads us to a future city that is different from our existing one? [48]

Despite the existing framework of control and the limits of capital and funding, tactical urbanism is making great stride towards a new type of city.[49] The forgotten spaces in our cities, at the periphery of structures of power and wealth, are grounds of experimentation. These forgotten spaces or spaces in the in-between are the "interstitial spaces" of the city, sometimes called by others as "residual space". [50] In her book, Claiming Residual Spaces in the Heterogenous City, Erica Villagomez notes that in order to claim these spaces, the city must be engaged at the "intimate scale of the person, focusing on the potential of ordinary spaces within our built environment"[51] Given that such spaces are often in disrepair, small interventions need not require large capital investment, particularly through the engagement of local communities and individuals. Moreover, the transformation of these everyday

[47] The word skipters derive from the words hipster and skip bin, a large dumpster bin.

[48] Purcell, Mark. 2014. "Possible Worlds: Henri Lefebvre and the Right to the City." Journal of Urban Affairs 36 (1): 141–54. doi:10.1111/juaf.12034.

[49] Lydon, Mike, and et al. 2012. "Tactical Urbanism." Issuu. http://issuu.com/streetplanscollaborative/docs/tactical_urbanism_vol_2_final.

[50] Villagomez, Erica. 2010. "Claiming Residual Spaces in the Heterogenous City." In , Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities.

[51] Villagomez, Erica. 2010. "Claiming Residual Spaces in the Heterogenous City." In , Insurgent Public Space: Guerrilla Urbanism and the Remaking of Contemporary Cities.

spaces can have large social, economic, and ecological impacts on the livability and quality of our cities.

2.2.1 Informal Creativity

Tactical urbanism has been referred to as the antithesis of formalized planning and as "open-sourced".[52] It is a bottom-up process. These participants are not merely awaiting the consideration of policy makers who perceive them as municipal elements to be accommodated. For instance, grassroots movements for combatting commercial property neglect through the temporary tenancy of vacant storefronts are referred to as "informal revitalization" or "transformative interventions". 'Temporary', 'ephemeral', 'Transitory', 'Provisional', 'DIY', 'Guerilla', 'Ad-hoc', 'Open-source' and 'Tactical' Urbanism are but some of the numerous names given to grassroots efforts at "empowering local residents to take ownership over their environment".[53] [54] [55]

The very term "urbanization," from the Roman *urbs*, was introduced by the prolific Catalan planner of Barcelona, Ildefons Cerdà, "one of the most enduring in urban and planning theory" and "a multifaceted resource for naming, managing, governing, producing, and even critiquing contemporary cities."[57] At the same time, it sets up a potentially problematic dichotomy when definitions are varied and real world instantiations are hardly so clear cut in terms of actors, organization and porous concepts of legality.[58]

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[52] Sassen, Saskia. 2011. "The New York City Reader: A Newspaper of Public Space", July 29.
http://www.newcityreader.net/issue15.html.
[53] Groth, Jacqueline, and Eric Corijn. 2005. "Reclaiming Urbanity: Indeterminate Spaces,
Informal Actors and Urban Agenda Setting." Urban Studies 42 (3): 503–26. 3. doi:10.1080/00420980500035436.
[54] Johansson, Marjana, and Jerzy Kociatkiewicz. 2011. "City Festivals: Creativity and Control in Staged Urban Experiences." European Urban and Regional Studies 18 (4): 392–405. doi:10.1177/0969776411407810. 393.
[55] Camponeschi, Chiara. 2010. The Enabling City: Place-Based Creative Problem-Solving and the Power of the Everyday. Major Portfolio Research, York University. Toronto: Creative Commons. http://enablingcity.com/. 5.
[57] McFarlane, Colin. 2012. "Rethinking Informality: Politics, Crisis, and the City." Planning Theory & Practice, 13(1): 89-108. 2.
[58] Pallares-Barbera, Montserrat, Anna Badia & Jordi Duch. 2011. "Cerdà and Barcelona: The

Often on the way to work, school or running errands, we notice the neglected yards, empty storefronts, and abandoned lots. Many of these urban spaces have fell this way due to deindustrialization, demographic shifts, economic recession and suburbanization. As a result, many of these urban spaces are deteriorating, attracting crime and debris. These unoccupied spaces leave these areas open to criminal behavior and unwanted activity. Vacant unused areas become prime targets for trespassing, vandalism, and drug use and the urban community suffers as a consequence.

At this time, formal urban planning by government and private groups ignore these sites, most of which can be seen as residual unusable space. For centuries, traditional thought was that ideal buildings at the urban scale focused on the permanence of an object in space and time. As we continue towards the future, we travel further away from Heidegger's idea "soil and homeland" and towards a new idea of belonging, but in this case, "non-belonging".[59] The architects of today serve the buildings requirements of old that put focus on eternity and permanence. People are changing and buildings are not. With globalization, the melting pot of cultures is getting larger and more homogenized; people begin to live without attachment to place. As Rem Koolhaas infers in "Junkspace", this feeling of non-place has allowed spaces between the permanent to begin to transform and mutate into entities that are stimulated by the uncertainties made by people, rather than the buildings themselves. [60] These spaces reflect what today's society is heading towards, a creative economy. Among these spaces, there are those that are temporary and ephemeral, those that are occupied for a short time without any permanent intention and born from this creative economy. They embody what formal architecture should be. They take a different approach and are used based on local conditions. This doesn't mean that these spaces did not exist before. They have always existed but, as technology advanced, they were simply put aside. Temporary open-markets and street vendors played vital roles in the origin and organization of cities during the early ages. They show up in modern times in different ways, exposing the desires of the people who occupy these spaces.

Need for a New City and Service Provision." Urbani izziv, 22(2): 122-36.
[59] Thomas, J. Mark. Ethics and Technoculture. Lanham, MD: University Press of America, 1987. 247.
[60] Koolhaas, Rem. "Junkspace." October 100 (2006): 175-90.

2.2.2 Antecedent of Tactical Urbanism

The precedent studies brought up later in this research are not new when compared to other areas of the world whose histories date much further back. Throughout the course of human history, city dwellers and residents have altered their surroundings daily in order to increase their quality of life. This is still done today in older cities and cities in developing countries where one must fight on the streets to survive. This informality of space and its practices date back even to ancient Rome. In cities in developing countries, there exists such extreme interventions as filling one's own potholes or digging a new sewage system which may seem unremarkable but for a majority of the time is understood to be definitely necessary. This sort of cultural and historical relevance is important for interpreting mobile urban interventions impacting today's modern urban cities.

Cities have always been places of structure, but as people dwell, the spaces between these structures, the interstitial spaces, are filled with nodes of informality. Ancient Rome, for example, had its rules and laws, but findings demonstrate that its streetscapes were an organically grown informal product of interventions. Alberto Angela describes "labyrinth networks of streets in all different sizes, walkways jumbled with casual commercial uses and jars left by industrial launderers as public toilets, and streets and building facades covered in creeping homegrown plant-life, endless drying laundry, and voluminous graffiti with unauthorized construction, even of enormous residential buildings, being common".[61] Any attempts at organized urban design – such as Nero's "new urban plan" to widen streets and improve access for emergency personnel in an effort to improve fire safety – would be quickly undone, "re-infested with unplanned development".[62]

Later, in medieval cities, the existence of particular buildings or services were organized by guilds of trade and commerce. Due to this organic nature, these cities were much disorganized and chaotic, impacting its inhabitants. Homes of the upper class were highly fortified and grew to be castles within cities in order to protect themselves from fighting and violence. Functions and services within an area were not marked or known and divisions of cities were created through the rivalry and

[61] Angela, Alberto. 2009. A Day in the Life of Ancient Rome, translated by G. Conti. New York: Europa Editions. 90.
[62] Angela, Alberto. 2009. A Day in the Life of Ancient Rome, translated by G. Conti. New York: Europa Editions. 107.

territory of upper elite families.[63] Streets and districts themselves were defined by trades and industries. In Reims, France, for example, David Nicholas explains, "The Mercers and Spicers' Streets were between the market and the abbey, while the goldsmiths were nearby, and Minters' Street led off the market. [...] On the other side of the rue de Vesle, which led from the gate, the archbishop converted his garden into an industrial suburb."[64]

By the 13th Century, these trade-based identities did not resemble their time period and became heavily anachronistic, even though street names themselves were largely unchanged.[65] Street names also came from famous buildings or landmarks, and denoted by signs or sculptures placed by its owners. In terms of how they came to form, pre-modern cities were more centripetal than centrifugal in growth, and more binary than complex in their functional spatial divisions, with wealth and administration concentrated in the center and poverty nearer the outskirts. During the Renaissance, urban form and cities became more formalized, leading to more structured cities.

Practice and use of urban interventions date back hundreds of years, going back to at least ancient Rome. Unfortunately, the contemporary forms of these interventions have only came to being recently. The members of the creative class see these spaces as a stage in which to do their art and this reflects the way the urban space becomes theirs, even if for just a moment. The engagement between these users with the space is a means of pursuing their own identity in addition to give the space an identity. Thus, the identity and quality of a space is directly related to the experiences of that space. This idea is similar to the theoretical models brought about during the situationist movement in the 1960s.[66] Much of these interventions started as "guerrilla theater," using public space and performance space. The 1960s

[63] Sutcliffe, Anthony, ed. 1980. The Rise of Modern Urban Planning. London: Mansell. 3.
[64] Nicholas, David. 1997. The Growth of the Medieval City: From Late Antiquity to the Early Fourteenth Century. London & New York: Longman
[65] Nicholas, David. 1997. The Growth of the Medieval City: From Late Antiquity to the Early Fourteenth Century. London & New York: Longman
[66] Haydn, Florian. Temporary Urban Spaces: Concepts for the Use of City Spaces. Basel: Birkhäuser, 2006. 46

and early ‘70s also saw the turn in urban theory and spatial politics through the writings of Henri Lefebvre and David Harvey.

2.2.3 Current State of Tactical Urbanism

Compared to the 60s and 70s, temporary use and spaces have gained popularity as a means to respond in a more immediate way to current trends and physical conditions in cities. Street festivals and farmers’ markets are now common in most cities along with the use of vacant lands for interim uses. However, the recent increase in tactical and temporary projects, especially ones that are brought forward for formalization by citizens, warrant an examination of the current conditions that may be motivating the rise for temporary interventions.

In the book *Temporary Cities* by Peter Bishop and Lesley Williams, a number of conditions are outlined that can be considered drivers that have pushed temporary interventions in to the spotlight.[67] The first is the increasing social, economic and cultural uncertainty in our city, the deindustrialization of the urban fabric and increase in vacant interstitial spaces has led to a desire for more flexible and temporary functions.[68] Secondly, the generational shift between the baby boomers and millennials. The heightened expectations of the millennials and their need for immediate results and instant gratification have also driven temporary interventions. The third driver, as mentioned by, Lydon et al., is the increased role of technology and social media.[69] The internet has exacerbated the need for instant gratification and has allowed for the quick delivery of ideas and resources to the citizens. The fourth driver is the slow nature of planning and the hurdles of bureaucracy. This is one of the many reasons citizens have taken improvements of their urban spaces into they own hands, believing that the current planning process is not adaptable enough or resilient enough to keep up with social and economic trends.

People still continue to choose to affect their communities through the traditional planning processes by attending community workshops, sitting on neighborhood boards and associations. However, many citizens are choosing to directly impact their communities by spearheading local initiatives. According to “Temporary Cities”,

[67] Bishop, Peter and Lesley Williams. 2012. The Temporary City. London: Routledge.
[68] Bishop, Peter and Lesley Williams. 2012. The Temporary City. London: Routledge.
[69] Lydon, Mike, and et al. 2012. “Tactical Urbanism.” Issuu.

citizens appear to feel a local responsibility to contribute to the ways in which their communities develop.[70] Many cities now highlight the importance of citizen participation and engagement in planning processes with the value of citizen participation increasing along with it.

Nonetheless, there is still resistance from planners to support tactical projects. Existing bureaucratic structures and processes may make planners unwilling or unable to condone unsanctioned actions that occur at the margins of legal and regulatory frameworks. In addition to this, there exists a lack of comfort working with projects that have increased levels of risk and uncertainty. On the other side of the spectrum, actors who operate in an unsanctioned and sometimes illegal interventions, may resist the involvement of officials. Many recent projects are led by average citizens who wish to make local improvements. These citizens are likely to be supportive of collaborative planning alliances that include official actors. Given the current conditions, tactical urbanism is growing as a popular and useful tool for both planners and the average person to find more meaningful ways to engage the urban landscape.

2.3 Interstitial Space in Architecture

In terms of architectural discourse, the concept of "interstitial space" first shows up in Louis Kahn's Salk Institute of Biological Studies. Interstitial space was utilized by Kahn as a method to control the mechanical systems of his building. This was done through the creation of interstitial floors between functioning floors for pipes, ducts, and mechanical equipment, in turn making it more easily accessible for maintenance and repair. To architect Peter Eisenman, interstitial space also plays an important role in his buildings:

> "My recent work has been involved in an attempt to understand how … changes in spatial organizations affect our understanding of time and place. This work deals with how this internal time-space relationship affects how we understand buildings and more particularly, how we make plans and facades. Specifically my work addresses the space of difference between the exterior

[70] Bishop, Peter and Lesley Williams. 2012. The Temporary City. London: Routledge. 138.

and the interior and the space of difference that is also within the interior. The term that we use … for that space is the interstitial."[71]

This space of difference pertains to the relation between the exterior and interior. The space of difference, mentioned in the quote, is a trace of relationships that create form. In his buildings, Eisenman uses interstitial as a means to blur boundaries between elements that were old and the elements that were new. The value of the interstitial, in Eisenman's thought, is that it allows for the development of alterity in architecture, due to the judgment of repetition. [72] His project, Aronoff Center for Design and Art, exemplifies this accurately by creating an interstitial space that both divides and links together the exterior and interior spaces. To him, the space is not created by the forms on either side but the interstitial space was created to form geometries. The interior space is governed by the relationship between existing buildings and newly built additions. The result is an undulating motion; one that is more geometric and another which flows due to the curve in which the new functions are arranged. This not only produces the form of the adjacent building and multiplies its broken profile, but is also a curvaceous structure contrasting with the linearity of its surrounding. The component of space reinvents itself through the layering of multiple elements - time, programs and composition to formulate a place where users can deal with crossovers among disciplines and activities. For Eisenman, the process of interstitial in architecture can equally produce a void or densely occupied space. This interstitial space suggests an entirely new strategy to deal with the coexistence of the old and new.

At a larger sense of scale, Aldo van Eyck focuses on the interstitial on a more macro-approach, the role of interstitial in urbanism. Van Eyck described interstitial within the urban realm as a participatory urbanism.[73] For Van Eyck, participatory urbanism was "semi-hierarchical, semi-anarchic, highly participatory process involving many people over many decades. It was what might be called a cybernetic process, ground-up, top-down, inter-relating a mass of agents, each playing an equally crucial

[71]Benjamin, Andrew E. (2003). Blurred Zones: Investigations of the Interstitial: Eisenman Architects, 1988-1998. New York: Monacelli, 309.
[72] Benjamin, Andrew E. (2000). *Architectural philosophy*. London: Athlone Press. 41.
[73] "Lefaivre, Liane. Aldo *Van Eyck: the Playgrounds and the City.* Amsterdam: Stedelljk Museum, 2002. pp.45.

role, impossible to disentangle from one another."[74] It was a more participatory approach to urban planning. Van Eyck advocated a change in the citizen, a change in our own perceptions and ways of inhabiting the city. To do this, city dwellers required a new mindset in order to comprehend the interstitial aspects of the city, a form of urbanism that asks of the citizen, to change, to transform, and to evolve along with the urban fabric.

Another architect who also looks at the interstitial aspects of the city is Rem Koolhaas. In his "Junkspace" of 2001, Koolhaas defines "Junkspace" as a residue or a byproduct of the process of modernization itself:

"The built produce of modernization is not modern architecture but Junkspace. Junkspace is what remains after modernization has run its course or, more precisely, what coagulates while modernization is in progress, its fallout."26

With Koolhaas' "Junkspace" in mind, urban landscapes have also become symbols of development and evidence of a society's vitality. Acting as a connective fabric in cities, the Junkspace is able to radically transform neighborhoods, give identity and raise the quality of the urban fabric at a relatively affordable cost, as they do not entail major land purchases nor large scale development. Because development in the Junkspace relies upon community engagement, the small scale temporary interventions have the power to consolidate neighborhoods. This is particularly interesting in transitional or modest-income residential areas, which are often targets for gentrification. The Junkspace also provides a way of anchoring and stabilizing, lower-income districts, and better integrating them into the market rate city. The role of Junkspace as a more holistic approach to social and economic integration in cities must be explored further.

2.3.1 Origin, Role and Impact of Interstitial Space on the City

Cluttered and filled with makeshift shelters, the interstitial spaces of the city are viewed as hindrances, often associated with unemployment, crime and pollution. Because of this, government institutions continuously work on coming up with solutions for their redevelopment. Unfortunately, many of these spaces are not taken into consideration as they don't reach the minimal size, zoning or land use

[74] "Lefaivre, Liane. Aldo *Van Eyck: the Playgrounds and the City.* Amsterdam: Stedelljk Museum, 2002. pp.45.

requirements. As mentioned earlier in the previous section “Rights to the City”, urban spaces are defined and ranked according to the social and monetary value within the city.

This ranking and levels of order helps us understand the idea of how thesis interstitial spaces came to be, at a social level. Placing thesis spaces at the lowest level, spaces with no value, it will remain useless and become a magnet for negativity; people, activities or objects viewed by society to be negative. As a result, interstitial spaces point out and identify the faults within our city.

In Frederick Thrasher’s study of gangs in Chicago, Thrasher established a direct correlation between the interstitial spaces, the elements of the city, with minorities of the city that the rest of society would consider “interstitial”. He stated, “In nature foreign matter tends to collect and cake in every crack, crevice and cranny - interstices. There are also fissures and breaks in the structure of social organization.”[75] Much of the territory of the gangs Thrasher had studied was primarily located in the interstitial regions of a growing Chicago, an area he calls “the poverty belt”. This area is characterized by deteriorating neighborhoods, migrant population and disorganized infrastructure.[76] As the gang is regarded as an interstitial element within society, their territory can be considered as interstitial space within the city. Much of these gang territories correlate directly with those spaces ranking in order and value to the city. Based on Thrasher’s study, the visibility of space becomes more apparent through its use. The lack of visibility of these spaces stem from the abandonment of them by the government, resulting in fewer laws, regulations, and enforcement in these areas. This is what had attracted gangs into these areas in the first place. In addition to transforming these interstitial spaces into magnets for negative elements, the lack of visibility also exacerbated the difficulty of finding these spaces.

The lack of function also adds to the attractiveness of negative elements to the site. Similar to how gangs in Thrasher’s study shifted towards the interstitial spaces of the city, the other interstitial elements of society, such as the homeless and those that

[75] Thrasher, Frederick M (1963). *The gang, a study of 1,313 gangs in Chicago,* University of Chicago Press, abridged version. 21.
[76] Thrasher, Frederick M (1963). *The gang, a study of 1,313 gangs in Chicago,* University of Chicago Press, abridged version. 21.

have no place, also shift towards the interstitial. This is done, not because they are attracted to it, but because they are pushed. These elements are forced to migrate from place to place as they are rejected and denied access to formal spaces. The level of emptiness and the level of visibility of space ultimately construct how interstitial spaces are formed and impacted by society. In order to remove the negative stigma of these spaces and halt their negative transformation, the emptiness of the space must be filled and it must become more visible to not only the more formal users of society but also the government bodies that maintains authority and jurisdiction over said space.

2.3.2 Interstitial Space as a Catalyst for Urban Revitalization

The urban fabric is littered with interstitial spaces that are either indeterminate, unregistered, in-between, spare or left-over spaces that are tended to, yet are underused. These spaces, such as abandoned lots, degrading post-industrial sites, or areas under bridges and viaducts, stand in contrast to the planned, definable spaces that make up the majority of the city. They become mistakes that were never erased from the landscape, defined only by the elements that lay beside them. This brings us to the question of “what is so good about interstitial space and why does it have so much potential?” The potential of these interstitial spaces derive from the lack of regulation and visibility to authorities, as mentioned by Thrasher in the literature review. These spaces allow for the unobstructed and unhindered activities that are outside the realm of normal.

Although there is a growing homogeneity and strict control of spaces within the city, there exists a growing number of unexpected possibilities originating from artists, activists, social organizations, architects, urban planners, and others creating activities, events, and physical interventions in and for urban public space. The conventional relationships between space and activity are growing weaker. This weakness is giving rise to the fluidity between the existing features and the possible rearrangements of city space. With this, what authorities will or will not allow has become undefined. A variety of different interventions have emerged in response to the inability for current urban design and development to deal with social, economic and ecological urban crisis. This has given rise to more informal urban interventions, such as tactical urbanism, in order to enact change. In instances of struggle over the citizen’s right to the city, brute force and violence were often used by activists during the Occupy Wall Street demonstrations. The potential of public space and the

undefined relationship between space and activity are continually contested and negotiated.

In the case of Honolulu, rapid urbanization due to the rise in population and increased demand for infrastructure and housing is predicted, concentrating in areas where transit oriented development is planned. As our urban core increases in density, space has become a hot commodity, the city faces the difficult challenge of developing and providing sustainable, healthy and livable urban environments that include well-developed infrastructure, clean air, water and food resources, preservation of biodiversity and cultural heritage as well as providing social balance and equality in urban spaces. A city with an undersupply of vacant land, while expecting significant future growth, is given a challenge to balance private development and public space. The programming of space within the city, due to the current trends, has created conditions where urban development produces public spaces for consumption and economic activities rather than for social activities, inclusion and healthy wellbeing. This leaves limited opportunity for people to take authorship in the creation of their living environments.

If we consider the potential of the interstitial as spaces of social freedom and urban resilience in the otherwise homogeneous urban landscape, it is open to us to question how we can respond to the spaces from social minorities' point of view. What kind of interventions can take place? How do they define appropriation with the goal of bringing social, economic and cultural renewal? The appropriation of the interstitial and the use of extended rights to express one's own creativity, which is generally confined to private spaces, becomes possible in the unregulated spaces of this city. This allows for the facilitation of urban change as it produces the opportunity for the experimentation and testing of ideas at a local level. Through this, citizens can legitimately provide critical discourse, challenging the "business as usual" train of thought.

2.4 State of Temporality

In the city, due to the constant movement of people, identities of space evolve and, as such, the design and function of a site need to shift so that it can meet the needs of the existing public or move to areas that are in need. This promotes programming and design that is more easily manipulated and altered to what allows for it to be responsive but flexible in order to meet both the needs of the people and the needs

of the physical aspects of the site. If this is not done, interstitial spaces will become neglected and begin to deteriorate. When development is challenging, informal, temporary tactics can be used in the interim to build social, cultural and economic value in a site.

2.4.1 Temporary Defined

First of all, what is meant when one uses the word temporary and what are the factors in which we distinguish between temporary and permanent. According to the Merriam-Webster dictionary, temporary is simply defined as “lasting for a limited time.” Though, to Florian Haydn, temporary “should be understood as situated ephemeral and provisiona.”[77] Typically, temporary is associated with terms such as interim and transient. When thoroughly planned, temporary use can be used to kick-start a transformation to the urban landscape. Unfortunately, the main challenge for temporary strategies is their effectiveness in the macro scale. Often, these temporary interventions are too “light” in terms of approach and often face infrastructure and interface issues. The results of these interventions vary in terms of their long term effectiveness at instigating change or awareness. Despite this, Haydn succinctly defines temporary use, in his book *Temporary Urban Spaces: Concepts for the use of City Spaces*, as “uses that are planned from the outset to be impermanent”.[78] From these definitions, it is sufficient to say that the term temporary focuses on the impermanence of the object rather than the scale of time. The main characteristic of “temporary” is its impermanence. In other words, it is the extent of the duration of use, whether it is a day or a few years, in relation to the space would be considered temporary.

2.4.2 Utilization

The use of temporary environments, as mentioned in earlier parts of this dissertation, can allow for experimentation within the constantly changing conditions

[77] Haydn, Florian. Temporary Urban Spaces: Concepts for the Use of City Spaces. Basel:
Birkhäuser, 2006. 55
[78] Haydn, Florian. Temporary Urban Spaces: Concepts for the Use of City Spaces. Basel:
Birkhäuser, 2006. 17

of the city.[79] Because the functions are continually changing depending on those conditions, the design of temporary interventions can respond to situations that would be difficult to expect. In his study of temporary use space, Philipp Oswalt, an Architect and professor of theory, acknowledges the factors which contribute to how temporary use can influence the effective utilization of spaces and the strategies that emerge from community input. From his research, Oswalt argues that temporary uses have the ability to attract activity to areas and to preserve, renovate and modernize areas.[80] Also from his research, Oswalt identifies three main types of temporary use that all other uses would derive from. These use types are: temporary as shelter; temporary as experimental; and temporary as public message. Temporary use is increasing in other fields and at various scales. Government organizations, established businesses and corporations are also using "temporary use" as methods of intervention, experimentation and as interim uses transitioning into newer modern development.[81] Each of these fields and goals have their own methods for site selection. Government organizations, for example, may be interested in investigative research by exploration and experimentation, while large corporations might be more concerned in testing the market for economic opportunity.

2.5 Conclusion: Importance of Interstitial, Urbanism and Temporality

The first section of the literature review 'Right to the City', highlights the importance for social equality and social justice within in society. Due to the expanding wealth gap between the upper and lower class, it is becoming more difficult for the lower class to increase their quality of life within the city. Like Lefebvre argued in much of his writing, without revolutionizing the everyday life, capitalism would continue to wear away at the quality of space in the city. The problems that Lefebvre had seen, runs rampant in Hawaii. Within Hawai'I current economic system, the socioeconomic status of a population remains tied to opportunities and challenges in education, housing and health. Individual, family, and household income continue to be strong

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[79] Oswalt, Philipp. *Urban Catalyst: The Power of Temporary Use*. Berlin: DOM Publisher, 2013. 12.
[80] Oswalt, Philipp. *Urban Catalyst: The Power of Temporary Use*. Berlin: DOM Publisher, 2013. 85.
[81] [81] Oswalt, Philipp. *Urban Catalyst: The Power of Temporary Use*. Berlin: DOM Publisher, 2013. 81.

indicators of socioeconomic status. It is important to instigate and catalyze this revolution in Hawaii, in order to increase the quality of life in our communities.

The second section of the literature review explores the movements that have identified this problem in our city that Lefebvre mentions. The people in these movements have begun to take action within their own communities. The sections also goes over the beginnings and history of tactical urbanism, one of these catalytic movements. It also goes over the successes of such movements. The strategies mentioned in this section can give more insight into how we, as citizens, can influence social dynamics and contribute to the formulation of a new urban culture in addition to engaging our city while increasing livability for all.

The third and fourth sections define what both interstitial and temporary means in terms of this research. Within the city, there are many different types of interstitial spaces at all scales and dimensions. The third section goes over its origin and the potential impact it can have to the city. The temporary portion of this research is very important due to the constant fluidity of the city, its people and its resources. In order to provide the most amount of people with the resources they need in the shortest time possible, mobility and flexibility through temporality will play a large role in the design portion of this research.

3 Methodology for Approaching the Interstitial

3.1 Rationale of Method

The aim of this dissertation is to unlock the hidden potential of interstitial spaces as a means to drive positive urban renewal. I will be analyzing the interstitial spaces of two sites in urban Honolulu. The spatial, socioeconomic and cultural transformation stemming from Transit Oriented Development (TOD) will also be analyzed.

In order to investigate the catalogue of spaces efficiently, the combination of theories on tactical urbanism, temporary intervention and interstitial space is needed. This combination will create a framework that will allow for the accurate observation and description of the existing and planned conditions, specifically areas with lower than standard urban conditions that are slated for massive developmental changes. In the current development process and methods, many of the design decisions are made in absence of those who would ultimately be living and using that area. This framework hopes to use a ground-up, citizen driven urban intervention approach to change the existing conditions that would drive and seed the need for certain resources to be provided once development in that area is done. This places socioeconomic and cultural needs at the center of the analysis, rather than relying on the willingness of the designer to engage with the users for the design. This would require engagement between each of the stakeholders such as owners, developers, architects, city officials, and the community of users we, as designers, are building for. This method of analysis would more efficiently react to the ever-changing conditions of site and place. The challenge for the implementation of this design strategy is defining an appropriate working process that would bring interested parties together, and establish a work plan that benefits all parties, while resolving the community's needs and concerns.

3.1.1 Variables for Identification of the Interstitial

The identification of existing routines determine a system of characteristics in the locations to be surveyed, which allow for a possible process of transformation to be identified. The translation of pre-existing everyday life strategies is done through a process of analysis that classifies places with transformation opportunities according to physical and social programmatic characteristics.

The creation of these maps were based on approaches of three characteristics of the urban landscape-the city as territory, the city as dynamic and the city as event:

Variables for Identifying	
Characteristic	Description
City as territories	The system of inhabitable spaces, and their topographical, historical, and social foundations; examples of this are the urban topographies, infrastructure and physical form, the environment and the borders and edges of spaces
City as a dynamic entity:	The city is constantly evolving due to the change stimuli of economic and social trends, defining and redefining form and space in the urban fabric.
City of events for cultural identity	The reconstruction of individual spaces for particular purposes and events. These events are supported by the passion of the people, generating a scheme of reference for the formalization of space. Examples of these are festivals, celebrations and markets that are formally recognized by the government authority.

Figure 1 Variables for identifying spaces

As the areas of focus continue to be developed, zoning changes happen, sources of goods and services move around and people move. The borders of social, economic and cultural territories begin to shift. These characteristics make it possible for those who reside in the area to create an identity. With a strong sense of neighborhood identity, people are more likely to feel a sense of security and belonging. People with a strongly defined social identity typically show positive outcomes in terms of education and health. Additionally, stronger social networks allow for better support and a sense of trust with people within those networks.

Based on the three characteristics, the inventory of spaces were created based on the aspects of physical and socio-cultural characteristics as shown in the following chart:

Aspects of Spaces	
Characteristic	Description
Physical:	• specific context and surroundings • government regulation of space • system of infrastructure • spatial and aesthetic quality of space
Social:	• systems of mobility • density of resource types • resource sources • user preference concerning space, everyday customs, main routes, etc.

Figure 2 Aspects of space

3.1.2 Variables for Cataloguing

In order to develop a diagnosis with a precise assessment, it is necessary to define the parameters that allow for the understanding of collected data. This evaluation system was organized according to hierarchies of values associated to physical and social conditions of place, such as nearest infrastructure, services and vacant spaces, extraordinary and ordinary activities relational systems, flows and nodes. The strategy then required the definition of a tool that could compare existing or latent opportunities in both the immediate and future context of that place.

The inclusion of spaces in the final catalogue with the most potential for urban change is based on their spatial impact, both tectonically and experientially, that strengthens the willingness of the residents to participate. As examples were added to space inventory, more variables became apparent and were added to differentiate and categorize spaces.

The variables included in the search and organization of the interstitial are:

Variables for Organization	
Characteristic	Description
Proximity	Location and distance to resources (food, service and living necessities)
Significance	Impact in the social and historical context
Tectonics	The elements that create, bound or hold the space.
Use	Intended or original use of the space and its adjacent surrounding
Unintended Use	How have people appropriated the space
Dimensions	Estimated size of the space, width : height : length
Circulation	When occupied what are the possible circulation patterns?
Access	Indoor or outdoor, roofed or open?
Intentional	Space Intentionally created for a specific purpose/use
Residual	Space left-over between two other made and primary spaces

Figure 3 Variables of Organization

The site analysis focused mainly on criteria pertaining to the characteristics and variables listed in Figure 3.

3.2 Real World Design Implementation: Practical Considerations

Since land in cities with dense urban cores is in undersupply, it makes sense to develop and improve interstitial spaces. Working under the assumption that public space is for the consumption and enjoyment of all citizens, it is right to assume that the implementation of improved architectural spaces within residual sites makes sense. The increase in the quality of life within these urban spaces correlates to economic gains; improvement in surrounding properties, increases in the value of the land and improvement in business profit. Projects developed on interstitial sites can result in more productive uses in terms of business opportunities, civic and public life, but there are obstacles that can hinder these developments. Land acquisition for development is very difficult due to multiple landowners surround certain interstitial spaces. Physical access and circulation to the site is often inhibited. In the denser parts of the city, property values are higher, making small-scale development financially unfeasible. For all of these reasons, the development process of the interstitial is complex and difficult.

Typically, a city's long-term growth plan concentrates on condo-heavy downtowns, transit oriented development, and a number of strategic discrete development zones. The interstitial sites are often not included in the city's official urban planning goals. Solutions to real constraints such as the provision of water, power and sewage

services to the site, along with privacy issues, accessibility and zoning requirements, all need to be found. As such, city planners have not given sufficient attention to the notion of using interstitial sites for redevelopment purposes.

3.2.1 Ownership

Developers wish to avoid long and drawn out land acquisition processes and negotiations with multiple owners, especially owners unwilling to sell their property. The implementation of large scale redevelopment projects depend on the acquisition of less ownership interests. "An ownership constraint can be said to exist if development is unable to proceed because the required ownership rights cannot rapidly be acquired through normal market process."[82] This condition is particularly applicable to interstitial lands. A long-term plan for interstitial development thus will rely on the creation of more imaginative land tenure mechanisms to create development sites, including development rights and modifications to code and regulations.

3.2.2 Funding and Community Support

The funding of interstitial intervention projects is also a major concern. From an economic standpoint, the primary object for investments is to make capital gains. Interstitial lands are unusual candidates for real estate development and do not represent profit on capital investments. However, an increase in land value can result from gentrification of the urban core, thereby raising the property values of burgeoning neighborhoods. At the scale that these interventions will be created, grant programs and collaborative funding for community-based projects are viable options. These include donations, fundraising, rental incomes generated from rental advertisement spaces or surplus charges for rental spaces to external organizations.

3.2.3 Implementation and Institutional Barriers

The first step is the implementation of a community-driven catalogue or database of possible projects. The city would invite citizens to submit propositions for redeveloping and improving interstitial urban spaces. Based on their merit, their

[82] J.Mawson. The urban task force report: Reviewing land ownership constraints to brownfield redevelopment." Regional Studies. November 2000, Vol. 34 (8). pp.777. * J.Mawson.

urgency, their feasibility, and their potential to positively affect the community, projects could be funded or have steps taken for implementation.

The second step is the creation of a community team tasked with defining objectives, and with identifying shortcomings and opportunities for the neighborhood. After gathering input from local residents, local businesses and community services, the team would identify a working plan to encourage the growth and stability of local businesses.

The third step is to rally interest and support from the owners of all the parcels and buildings that the proposed project would affect. Again, the city authority would coordinate the dialogue. In this stage, feasibility and economic impact studies, which are crucial in convincing the partners of the benefits of the project, would be conducted. Depending on the project, and on possible profits, the city authority would fund these studies with contributions of owners and developers. This process would be used as a guideline, and would most likely vary between projects.

Because this type of development is community oriented, the participation of local residents is vital to the success of the end-product. This method encourages the creation of community supported visions based on real observations and studies of existing communities. Other sequences of events are also feasible, including propositions initiated by architects, or building owners, among others. The main key is that these initiators mobilize the community early in the design process, to ensure that their project remains relevant to the community. The process of interstitial urbanism is often slow and logistically complex, but it offers a responsive long-term solution to neighborhood-scaled urban problems, that large-scale urban developments are simply not able to address.

3.2.4 Liability and Risk

Liability and safety are the most common issues when thinking of tactical and temporary interventions. Since many projects take place within the public right-of-way, official city authorities need to be involved, as the city can be held liable if someone becomes injured. While it is safe to assume that the city owns and is liable for safety issues within the public sphere, there are also public and private actors to consider.

For projects located in spaces managed by multiple entities, it is common for the liability to be shared amongst the different actors. For example, the city would carry general liability insurance to cover accidents within the public right-of-way. Property owners have insurance to cover their building or the vacant lot and designers of particular structures are required to carry professional insurance. Groups who ran programs or occupied the space were usually required to carry insurance or permit to host a temporary event. Many cities already have policies and processes to accommodate temporary structures, however, due to the unique nature of many tactical and temporary interventions, there can be confusion on how they should be categorized for insurance purposes. Most officials consulted with their municipal risk management departments to address potential issues and noted that while working with these departments was rarely a significant barrier, it was important to make the connection early and educate these departments about their project.

4 Project Precedents

This research looks at three precedent studies of temporary interventions to draw a general conclusion about the socioeconomic and cultural contexts conducive to the success of such projects. The study focuses particularly on the relationship between the projects long term planning and redevelopment processes. This research will deal mainly with temporary interventions in public space or publicly accessible space although some of the conclusions and ideas could equally apply to the temporary appropriation of vacant private and commercial space.

The case studies were:

- '2010 Bat Yam Biennale of Landscape Urbanism', Israel
- 'Proxy SF', San Francisco
- 'Tenderloin Public Toilet Project', San Francisco

4.1 Bat Yam "72 Hour Urban Action" Competition in 2010

This particular precedent study focuses on three interventions entered into the 72 Hour Urban Action competition. The three interventions focus on the Northern Gate, The Salon and The Lobby.

Figure 4 Bat Yam with intervention locations.[83]

Figure 5 Intervention Location with zoning designation.

4.1.1 Summary

Founded by architect Kareem Halbrecht and cultural planner Gilly Karjevsky, the Bat Yam International Biennale of Landscape Urbanism, "Urban Action," is an event in Bat Yam, Israel dedicated to exploring and redesigning landscapes and lifestyles,

[83] "Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.

focusing on the way the urban landscapes are constantly shifting. The individual projects in the event shows how these disruptions can be used as an opportunity for civic engagement and a way to create a better quality of life. The main focus for this precedent study was on the individual projects associated with the *72 Hour Urban Action* event that was part of the Biennale. The competition demonstrates the amount of improvement that can be done to public space in a short amount of time with a very limited budget. The projects in the competition accompanied existing municipal projects and catalyzed activity by citizens and cities' municipal organizations in order to re-think existing city patterns. The event attracted tens of thousands of local and international guests to the 41 Biennale sites, including a street theater festival and the city's diverse open spaces.[84]

Ten teams with a budget of 2,000 euros each, designed and constructed an intervention in a public space on a given site in three days and three nights. The entire process took 72 hours, hence the name of the competition, *72 Hour Urban Action.* The ten sites were spread out along a number of areas that contained a large amount of industrial properties, housing blocks and schools, possessing different levels of life qualities. The design briefs handed to each team varied in requirements. One project stressed the need for sheltered seating for elderly residents. Another asked for a sought to create an entrance to a local neighborhood as a means of way-finding and cultural place-making, while another required a proposal for an empty plot that suffered from chronic illegal dumping.

At the end of the competition, the public spaces transformed shading elements necessary to protect people from the sun and new seating areas and with spaces for children to play. As a result, retrospective building permits are now being submitted for each of the interventions, in order for them to become permanent intervention in the city.

4.1.2 Background

Bat-Yam is located at the heart of the Tel-Aviv metropolitan area. The city is 8,280,000 square meters and services approximately 160,000 people. Of the total population of the city, about 30% of the city's inhabitants are immigrants from areas formerly part of U.S.S.R. About 10% of the city's area are public open spaces with

[84] "72 HOUR URBAN ACTION." 72 HOUR URBAN ACTION. Accessed April 05, 2017. http://www.72hoururbanaction.com/bat-yam.

40.6% of the urban areas are used for residential and commercial purposes. Bat-Yam has 5 communal sports facilities, 2 libraries, 1 cultural center, 1 auditorium, 3 museums, 7 community centers and 1 football stadium. In relation to other cities in Israel, Bat Yam is 6th on the socioeconomic ranking on a scale from 1-10, with 10 representing Israel's strongest population. The average income per capita of residents in Bat Yam is above the national average.

4.1.3 Site Location

The site of the competition is located in the industrial business district of Bat Yam. It is defined by 4 main roads. North and south by Yoseftal and Komemiyut Streets - main traffic routes directly connecting Ayalon highway and the beach promenade. West: HaRav Nisenbaum road, the future tram system route, and east, HaNevi'im and Ort Israel streets which border a residential neighborhood.

The site location is positioned at the center of the city, allowing it to develop homogeneously to include commercial and industrial properties. The area is also considered low density. The current building code sets the height of the buildings proportionally to the size of the lot creating an urban fabric that is varied in height and spatially scattered. The streets are mainly used for service and supply vehicles that access local businesses. The scattered nature is exacerbated by the loading docks and the low structures, making it difficult to create a substantial street line. The building culture is of poor quality, leading to a dilapidated appearance and a problematic provision of infrastructure. The number of empty buildings is high, as is the number of active gasoline stations that contribute to the lack of a diverse urban fabric. The industrial area doesn't maintain visual connection to the beach front and the flow of urban fabric is fragmented. Streets stretching from neighboring areas change their character, or end when meeting the industrial area. This situation creates a broken passage from east to west of the city, through the central industrial area.

4.1.4 Vision and Goal

The strategic plan for the area suggests a transition from an industrial area into a vibrant business district, contributing to an increase in the social, economy and cultural quality of life for the residents of the city. It offers to strengthen and intensify the urban characteristics of the existing fabric: intensity, mixed use and renewal through cultural activities.

The strategic plan is based on four points:

- A main attraction for the city that unifies different nodes, creating a clear urban network.
- Strengthens the individuality of each neighborhood and quarter, with its unique cultural and urban characteristics.
- Increase of mixed use: commercial, residential, cultural and leisure.
- Adding independent income sources to the city's budget and attracting businesses.

The planning goal for the entirety of the competition area is to create an incentive to develop 2.5 million m2 of the city, in order to kick-start an economic regeneration. This will be done by adding to the number and variety of activities to attract a more diverse audience in hopes to encourage mixed use. The plan also aims to improve the image of the urban fabric by upgrading the public walkways and spaces creating additional pedestrian and bicycle paths. In order to create a more active street line, the streets must be defined as a main public space. This can be done by increasing building rights and by dividing larger lots into smaller lots to define a continuous street front.

4.1.5 Northern Gate: Urban Context and Mission

The design brief for the northern gate site was to create a public space that encouraged various uses at different times of the day, establishing a lively entrance to the business district. The site currently operates as the main pedestrian entry to Ort Israel Street and to the rest of the business district from Yoseftal Street.

Figure 6 Northern Gate Site[85]

The goal stated in the design brief hoped to activate the public space by fostering the sense of ownership by the residents. The large exposure to Yoseftal street to the northern boundary of the site was to be used to reinforce the identity of the neighborhood.

[85] "Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7,2016. Febuary 17, 2017.

Figure 7 Northern Gate Site Perspective[86]

This team made up of individuals from Israel, Poland and Germany, named BUT, YAM Team, re-ordered the parking lot to create a flow in the site. The team achieved this by creating a passage way between the parking lot and the open green space on the site.

[86] "Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.

Figure 8 The Northern Gate Intervention [87]

[87] Real-Time Architecture Competition. "But, Yam Team | Elevation." 7 October 2010. Online image. Flickr. 8 December 2016. <https://www.flickr.com/photos/72hua/5058143549/>

4.1.6 The Salon: Urban Context and Mission

For this intervention, the design brief aimed to synchronize the existing physical attributes of the site with the sparse number of green spaces by expanding the building's common grounds to compensate for the lack of privately owned green spaces.

Figure 9 The Salon Site[88]

[88] "Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.

Figure 10 The Salon Site Perspective[89]

The condition was to optimize the view that the site has over the neighborhood park to the north, the boulevard to the east, and the public space of the area. Many of the users of the space in the area are the residents of the neighboring houses and the parents of the children using the playground adjacent to the site. The addition of the intervention has created a seating area that attracts more users to the site and provide shaded seating for the parents looking after their children while connecting the boulevard, the playground and the parking lot, previously seen as separate entities.

[89] "Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.

Figure 11 The Salon photos[90] [91] [92]

[90] Arkadir, Mor. " 712 Team | Complete Project." 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5055224113/>
[91] Arkadir, Mor. " 712 Team | Complete Project." 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5055841708/>
Arkadir, Mor. " 712 Team | Team on Site." 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5055224113/>

4.1.7 The Lobby: Urban Context and Mission

Figure 12 The Lobby Site Location[93]

For this intervention, the design brief sought to provide the residents with high quality spaces for community gathering. A tower had been designated as a home for elderly immigrants which lacked public spaces after its conversion. The residents spent much of their time outside its entrance, the only place they had for socializing and experiencing the street and the neighborhood.

[93] Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.

Figure 13 The Lobby Site Location[94]

The goal for this intervention was to facilitate the interaction between the tower residents and the surrounding residents. It aimed to respond to the over-crowded conditions of the area by adapting the already well-used and functioning public space and harnessing the unique qualities that the site had already offered such as shade and connection to the sidewalk. As part of the regeneration plans for the area, the hope was to apply the same intervention application to similar buildings as the tower.

Figure 14 Site Plan of different Interventions [95]

[94] Bat Yam" 32.0132° N, 34.7480° E. Google Earth. June 7, 2016. February 17, 2017.
[95] Real-Time Architecture Competition. " Dasding Hofmann's Team | Diagram" 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5058754504/>

Figure 15 Site Perspective of The Lobby[96]

The team enriched the street line with color and movement through the installation of portable wall-mounted benches, shading systems, and a street level chandelier made out of recycled materials as an extension to the urban furniture and seating already existing in the area.

Figure 16 Site Intervention [97]

[96] Real-Time Architecture Competition. " Dasding Hofmann's Team | Diagram" 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5058142439/>

[97] Arkadir, Mor. " Dasding Hofmann's Team | Complete Project7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5055222583/>

Figure 17 Site Intervention[98]

4.1.8 Conclusion

These three interventions increased the quality of the spaces and raised awareness amongst residents and municipal government organizations about the possibility of making improvements to public spaces quickly and with a limited budget. The competition showed that urban interventions don't necessarily need to be done over many years or with a large budget, in order to make tangible improvements in the urban landscape.

4.2 San Francisco 'Proxy SF'

With the move of large tech companies, such as Facebook and Twitter, there has been a rise in urban density and gentrification that has contributed to the social inequality in San Francisco. In response to the social and economic disparity and the lack of usable space, there has been a surge of tactical urbanism. This activism has led to political changes to the Ellis Act, a California State Law that allows landlords to legally evict tenants as a way to "go out of business".[99] The next precedent study is a prime example in San Francisco of a planning model for shaping neighborhood public space through partnerships between citizens, public organizations and private groups: PROXY SF. The precedent facilitates the temporary and interim use of

[98] Arkadir, Mor. Dasding Hofmann's Team | Complete Project" 7 October 2010. Online image. Flickr. 8 December 2016. < https://www.flickr.com/photos/72hua/5055221307/>
[99] Rachel Brahinsky, "The Death of the City?" *Boom: A Journal of California* 4, No. 2 (2014), 43-54.

interstitial spaces and embodies the formalization of activist tactics into more formal planning programs.

4.2.1. Location

The project site is located in the overlap between two neighborhoods: Hayes Valley and Market-Octavia. One of three areas in the Better Neighborhoods Program, the neighborhood offers a set of opportunities for change sensitive to existing patterns. During the dot.com boom of the 1990s, the areas experienced a large demographic change from the influx of white, educated middle-class.[100] The area also experienced physical changes when the elevated central freeway was removed in 2003.

The elevated freeway structure was built during the 1950s, bringing with it unsightly urban decay. The freeway structure was damaged during the Loma Prieta earthquake that forced its closed in 1991. Before its removal, the freeway delayed the gentrification of the area and allowed for the evolution of the area where the site focus is located.

The commercial district of Hayes Valley caters mainly to the younger demographic with disposable income.[101] Fortunately, the interstitial spaces created by the freeway supports a variety of ages and lifestyles. The area's urban planning from the existence of the freeway structure created "close-knit pattern of streets and alleys", making it pedestrian friendly and allowing it to retain its economic and ethnic diversity.[102] The neighborhood houses a unique demographic population that is economically, ethnically and generationally diverse.

4.2.2 Urban Context and Mission

Proxy is a temporary project that leases empty lots from the city, previously land which the elevated freeway structure was situated on. The project uses shipping containers refitted to create an open framework, embracing the "impermanence" of

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[100] Robert Cervero, Junhee Kang, and Kevin Shively, "From elevated freeways to surface boulevards: neighborhood and housing price impacts in San Francisco," Journal of Urbanism 2.1 (2009): 40-41.
[101] City Data: Hayes Valley Neighborhood, 2011 data, accessed December 10, 2016, http://www.city-data.com/neighborhood/Hayes-Valley-San-Francisco-CA.html
[102] San Francisco Planning Department, "Introduction," *Market and Octavia Area Plan*, accessed December 10, 2016, http://generalplan.sfplanning.org/Market_Octavia.htm.

the whole project. Proxy has become the focal point of the area and has become a role model for other cities to make efficient use of land and its latent potential, thereby transforming underused areas into high- value cultural experiences.

The Proxy SF project itself occupies two vacant lots along Octavia Street between Fell and Hayes Street and bisected by Linden Alley. Previously, the spaces were used as surface parking.

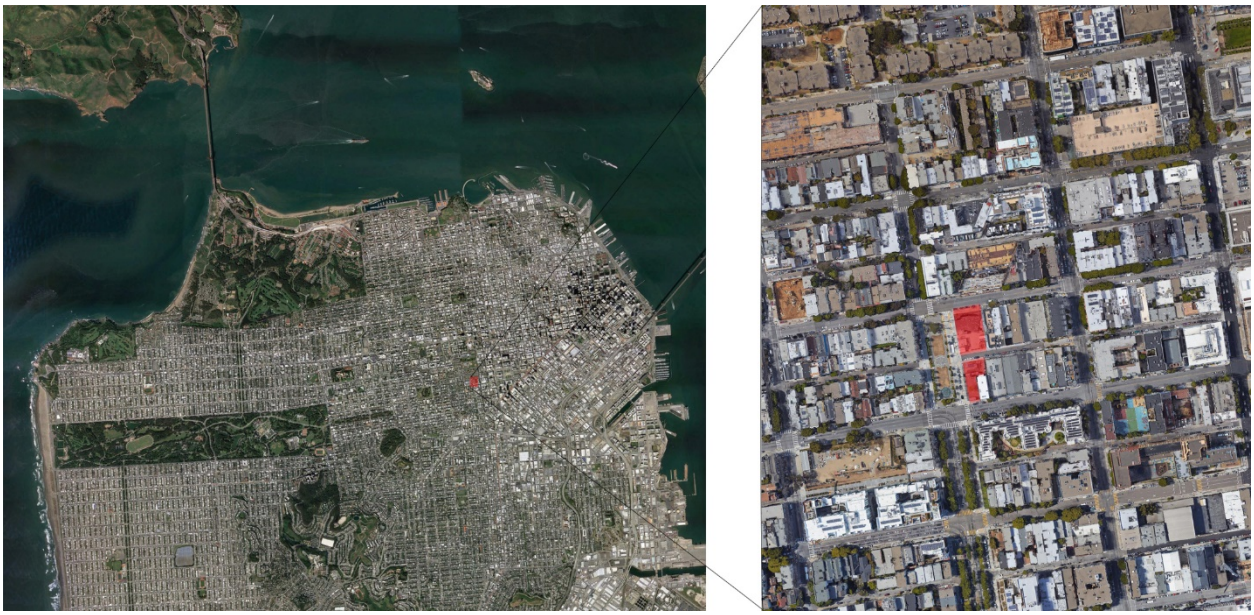

Figure 18 Proxy SF Location in San Francisco[103]

The goal for Proxy was to create a comfortable atmosphere with functions that activate the spaces in their neighborhood. The architects were interested in the lot's public presence. They wanted to create a vibrant place for commerce and culture for the area while maintaining the temporary nature of the project. This is where the project received its name 'Proxy', a placeholder until a more permanent structure could take its place. Proxy was created as a space for experimentation to occur and to hopefully change the public's perception of what is possible, stressing the importance of presence, impermanence and "seizing the moment in our lives".

[103] "San Francisco" 37.7749° N, 122.4194° W. Google Earth. November 2, 2016. Febuary 17, 2017.

Figure 19 Proxy Final Proposal[104]

4.2.3 Funding and Implementation

A publicized competition for proposals was held in 2005, with Envelope A+D winning. Unfortunately, development halted due to the slow economy. In response to the economic downturn, the Office of Economic and Workforce Development issued an RFP, seeking entrepreneurs to lease these unused spaces for temporary functions until they could be sold and developed. Envelope A+D's proposal was accepted but responsibility for funding the project was with the firm. Also, the city sought to collect rent for two lots. As a result, Proxy is supported by the vendors who also pay for the design and customization of shipping containers that they use on-site. Envelope A+D is also the curator of Proxy's content and vendors which come from their connections to local vendors and artists. After the project's implementation, the municipal government has supported the project by streamlining the permitting process.

4.2.4 Phasing and Design

In order for Envelope A+D to procure funding, community support and easier navigation through the government bureaucracy, the project was separated into four phases was done. It also allowed for easier curating of vendors and events. The phasing also separated the function and programs: food, retail, art and play.

[104] Envelope A+D. "PROXY" Online image. 8 December 2016. < http://www.envelopead.com/proj_octaviakl.html/>

Figure 20 Phase 1: proxyEAT [105]

proxyEAT, a series of long-term and short-term rotating food vendors presenting a diverse range of food types, was derived from San Francisco's already existing vibrant food culture. proxyEAT was the first phase, building excitement within the community through the sharing of food.

[105] Envelope A+D. " PROXY: OCTAVIA/HAYES LOTS K+L PHASE 1"Online image. 8 December 2016. < http://www.envelopead.com/proj_octaviakl.html/>

Figure 21 Phase 2: proxyART [106]

proxyART was the second phase and it sought to bring art into the public realm. The art exists in the gallery building and dispersed around the site. Focusing on the project's idea of impermanence, the gallery that the art is housed in was designed to be a re-deployable structure with the intention that it can be located elsewhere after Proxy's lease is up. The goal for proxyART is to slowly integrate art into the public realm.

[106] Envelope A+D. "PROXY: OCTAVIA/HAYES LOTS K+L PHASE 2"Online image. 8 December 2016. < http://www.envelopead.com/proj_octaviakl.html/>

Figure 22 Phase 3: proxyART

proxySTOREFRONT is a series of pop-up vendors offering design, retail and services. As with the vendors, the content that is served is also curated and grouped together, rotating every three months. Many of the stores include local designers and wares that are not available anywhere else.

Figure 23 Phase 4: proxySTOREFRONT[107]

proxyPLAY is a covered semi-interior space for the community housing different types of events from movies, community meetings, fairs or large-scale events. Connected to proxyART, proxyPLAY hopes to expand the interrelationship between the other proxy components.

4.2.5 Potential as Urban Catalyst

Fitting well into the main commercial shopping district in the main corridor that caters to the wealthier demographic, Proxy relies on commerce and events as a means to create an active urban space that focuses on engaging a more diverse population and underserved neighborhood. The initiative to develop a temporary intervention for the vacant lots in Hayes Valley was brought to the city by members and citizens of the neighborhood. Envelope A+D's proposal evolved in close dialog with the neighborhood association.[108]

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[107] Envelope A+D. "PROXY: OCTAVIA/HAYES LOTS K+L PHASE 4"Online image. 8 December 2016. < http://www.envelopead.com/proj_octaviakl.html/>

[108] Lindsey Westbrook, "Douglas Burnham - On the Potentials of Impermanence," *Glance*, Vol. 23 No.1, Fall 2014, 30.

During the development of Proxy, the close connection between the city and its citizens ensured the desires of the two were met.[109] Proxy's strategy of phasing and curating the vendors proved to be a successful testing ground for experimentation. It relied heavily on a strong and sustained leadership as an intermediary between the city and the vendors. Envelope A+D pro-actively managed the spatial and temporal scale of the project by leveraging existing leadership within the neighborhood association, forming strong alliances with city departments, and splicing together a broad network of sponsors, vendors, and participants who keep the project active and changing. These alliances has left a lasting impact on the local community. As a result of its success, Proxy's short lease had been extended to 2021.

4.2.6 Conclusion

The process of formalizing the proactive citizen activism and use of tactical urbanism into planning strategies changes the nature of how citizens engage with urban landscape. In most cases, both temporary and long term interventions in other cities often distances itself from direct participation due to political bureaucracy. Each of the programs provided by Proxy encouraged the participation of citizens, making alliances between stakeholders a necessity. The Proxy precedent study highlights the issue of funding. In areas where land is a commodity and development is unreasonably high, inclusive partnerships between public and private stakeholders have the potential to shift and influence awareness amongst the public that combats the forces of gentrification. These citizen alliances have the potential to lead citizen empowerment and to future initiatives that strengthen neighborhoods and contribute to connecting people to their city, both for current and future residents.

4.3 Tenderloin Public Toilet Project

This section will look at a precedent that aims to address sanitation and hygiene issues in the city of San Francisco. As San Francisco's tech bubble increases, the homeless population also grows. Majority of homeless population have lost their homes due to tech workers driving up rental prices. Google, Facebook and other tech companies, whose headquarters are based in Silicon Valley, has come under scrutiny for exacerbating the problem. These tech companies are under increased pressure to right any perceived wrongs that have come as a result of their presence

[109] Douglas Burnham, "Proxy: An Experiment in Flexible Urbanism," *On Site in the City*, 11/001 (Sept. 2011): 32.

in local communities and are doing this by providing connections to people who wouldn't have had access to healthcare resources.[110] This connectivity has allowed for incredible changes for societal good and communities in the area.

The Tenderloin Public Toilet Project, created by Hyphae Design Laboratory through a participatory design process, is an example of this. There are thousands of homeless people in San Francisco and without access to public bathrooms. We associate sanitation problems with the third world, but more than 7,000 people are homeless and are without places to sleep or go to the bathroom.[111] The goal for this project is to provide this area with a free service for the community, but long-term maintenance continues to be the major hurdle in funding new models of urban sanitation.

4.3.1 Location

The project design had a number of potential forms that were considered. The first typology was a 'parklet' type, a mobile and quickly assembled structure located in one or two parking spaces. A parklet repurposes part of the street into a public space. They are intended as aesthetic enhancements to the streetscape, providing an economical solution to the need for increased public open space.[112] For a parklet, the location is important but flexible. If a chosen location fails, the parklet structure can be moved to a new location quickly. For the other typologies, significantly more time will need to be invested in finding potential sites, causing the permit processing time in increase. Stakeholders input, community feedback, permitting agencies, and various site constraints have influenced the location analysis.

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[110] http://money.cnn.com/2016/10/14/technology/tents-homeless-ban-san-francisco/Some San Francisco residents want that to stop. "San Francisco's tech elite fund measure to ban homeless camps." CNNMoney. Cable News Network, n.d. Web. 15 Feb. 2017.

[111] 2015 San Francisco Point-In-Time Homeless Count & Survey. p23

[112] San Francisco Parklet Manual, Version 1.0 (February 2013). San Francisco Planning Department. p1

Figure 24 Overlay of Tenderloin Project Data[113]

Figure 25 Tenderloin Project potential sites[114]

[113] Hyphaedesignlab. "Tenderloin Public Toilet Project." Tenderloin Public Toilet Project . ISSUU, 22 July 2012. Web. 15 Feb. 2017. p42-48
[114] Hyphaedesignlab. "Tenderloin Public Toilet Project." Tenderloin Public Toilet Project . ISSUU, 22 July 2012. Web. 15 Feb. 2017. p48

Based on a community input, incident locations, proximity to neighborhood stewards, local shelters, crime zones, location of existing public toilets, transit routes and stops, location of green and vacant spaces and storm drain locations, a number of potential locations were chosen for a parklet design.

4.4.2 Urban Context of San Francisco

Hyphae Design Laboratory envisioned a new type of restroom model that focused on maximizing water reuse, increasing user experience and creating greener jobs. The proposed ecological restroom hopes to alleviate the city's severe ongoing problem of public urination and defecation.

There are numerous reasons to focus on public restrooms. First, public restrooms are a basic infrastructure need in every city and they also make cities more pedestrian and tourist-friendly, allowing people to be away from home or the office for longer periods of time. Secondly, it creates a more socially just culture whereby the homeless are not unfairly punished for public urination and defecation. Accessible public restrooms also make for a more equitable society in the sense that people with disabilities and increased restroom need are more able to spend time in public spaces rather than worrying about where to find a restroom. Some international cities have come to embrace the use of Automatic Pay Toilets in high traffic public areas, with many such projects having failed to meet public need.

As Hyphae Design Studio had proposed, there are multiple options to approach the problem. One option may be to have standalone or storefront restrooms with a combination of toilets, sinks with attendants or vendors nearby who were responsible for that restroom Another option could be semi-public restrooms located inside a private space, such as a hotel, museum, or parking lot, that have a public entrance for all to use.

4.3.3 Funding

Targeting sources of funding is one of the most challenging elements for this type of community focused-driven project. Although existing automated public toilets in San Francisco through their 'Pit Stop program'' are funded by JCDe-caux's advertising revenue, the city will not allow any further use of a direct advertising-funded

model.[115] There are several funding alternatives that were investigated as part of the public restroom design process, although the alternatives are not mutually exclusive. It is likely that a combination of funding sources will ultimately be the key to raising enough funding to make the project an ongoing success. Raising money for the design and construction of the restroom is important, but ensuring sufficient funds for ongoing operations and maintenance is essential to the projects' success. Without operations and maintenance funding commitments, the project will not be constructed.

The following sources of funding are under consideration, to be described in detail below: Foundations, Government, Private Companies, Community Benefit Districts, Crowd-funding, and Pay-per-use[116]:

[115] Pit Stop. (n.d.). Retrieved February 15, 2017, from http://sfpublicworks.org/pitstop

[116] Hyphaedesignlab. "Tenderloin Public Toilet Project." Tenderloin Public Toilet Project . ISSUU, 22 July 2012. Web. 15 Feb. 2017.

Funding Sources	
Source	Description
Foundations:	Several foundations have been identified whose goals overlap with the goals of the ecological public restroom project, particularly those with a focus on public health, homelessness or community livability. The foundation list at right are recommended to pursue; none have yet committed funding. In many cases, foundations require application by a 501(c)3 status. Benefits: • No required payback • No use of taxpayer money • Grant writing sharpens project vision/purpose Challenges: • Grant writing is time consuming • Grant awards are highly competitive • Funds typically awarded months after grant application (time lag)
Government:	There are select opportunities for federal, state, and local grant money that could be used for the project. Benefits: • No required payback • Amounts granted may be large • Grant writing sharpens project vision/purpose Challenges: • Funds typically awarded months after grant application (time lag) • Grant awards are highly competitive • Grant writing is time consuming (especially government • Use of taxpayer money unpopular
Private Companies:	There is some overlap between private companies and private foundations, and some of the companies we examined have corporate giving policies and therefore are similar to foundations. Benefits: • No required payback • Minimal grant writing requirements • Timely awarding of funds • Challenges: • Requires significant time making relationships • Some expectation of advertising • Lack of transparency about funding amounts

Characteristic	Description
Special District Status:	A special district status may also allow the funding of part of the operations and maintenance budget of the ecological restroom project. However, neighboring benefit districts could also make financial contributions towards capital or O&M costs. Benefits: • No required payback • Minimal grant writing requirements • Timely awarding of funds Challenges: • Must convince these districts of the need, even if initial project is outside their district • Funding amounts may be low due to tight budgets
Crowd-funding:	Another potential funding avenue includes crowd-sourced funding models such as Kickstarter, RocketHub, and GlobalGiving. With Kickstarter and RocketHub, each contributor must receive some-thing in return. GlobalGiving is for charitable causes. Benefits: • Increased online visibility • Funding coming from wide variety of people; good barometer for project's overall appeal • Timely awarding of funds Challenges: • For Kickstarter and RocketHub, must give donor something similar in value to the contribution amount • Project must have a great video
Pay-Per-Use:	Although keeping the toilet free for very low-income users is still recommended, having a pay-per-use system for the majority of users could help pay for operations and maintenance costs asso-ciated with the restrooms. Potential revenues associated with pay-per-use (Example): 100 paid uses per day, 50 users with cash, 50 with credit Toilet costs 25 cents, 50 cents with credit/debit: =Toilet Revenue Per day: $37.50 Benefits: • People may not mistreat restrooms if asked to pay • Contributes to paying for attendants, maintenance Challenges: • Requires mechanism for allowing certain people to enter for free • Bathroom use is a human right; don't want to discourage use of toilets because of the fee

Figure 26 Funding Sources[117]

[117] Hyphaedesignlab. "Tenderloin Public Toilet Project." Tenderloin Public Toilet Project . ISSUU, 22 July 2012. Web. 15 Feb. 2017.

4.4 Overview of Precedents

The biggest difference in these particular projects was their scale of time. In a way, it is difficult to bring all these projects together under the word temporary as these projects ranged from a few days to a number of years. The Bat Yam competition was an excellent example of instances or projects that are easily implemented into the city that can great affect the quality of life in areas that they are implemented. It was also a good example of the government organizations working together with its citizens to think of ways and ideas to get both entities to rethink the existing city patterns.

The second precedent was the 'Proxy' project. It served as a flexible development that introduced food and art through low-budget means. One of the major ideas to take-away from this project is the potential that it had to bring in people into the area. The land that 'Proxy' is situated on is meant for a housing development, but before that project can be developed, it has to become a place that is desirable to live in. Through the economic revitalization via their services, 'Proxy' had successfully attracted more activity to the area.

Third was the Tenderloin Public Toilet Project, the main focus for this precedent study was their use of mapping analysis to find optimal potential locations, their involvement with their community and their funding models. Their community-based approach was in-tune with the idea of tactical urbanism and the 'bottom-up' approach that allowed the community members to feel supportive and prideful for their work in their own communities.

In these three precedent cases, what we can learn is the period in which each project was developed in relation to the ongoing development in the area and the level of risk. In all three of these projects, they were developed at a time when there was a need certain resources, were flexible and temporary in location and were able to dilute the risk of failure.

5 Oahu Urban Development

5.1 Background and Characteristics

The nearest continental land mass is over 2,400 miles away making Hawai'i one of the world's most remote group of islands. Hawai'i's climate is also one of the most diverse on the planet. Of all the major 11 different biomes on Earth, only tundra is not found in Hawai'i. The surrounding tropical ocean supplies moisture to the air year round. The islands are usually bathed in northeasterly trade winds due to a semi-permanent atmospheric high pressure cell that is situated northeast of the islands. The elevation of Oahu's mountains significantly influences the local weather and climate.

On Oahu, rainfall amount and distribution closely follow the topographic contours of the islands. Rainfall is greatest at ridges and windward areas and is least in leeward. The windward sides of the island can receive more than 200 inches per year, and leeward areas can receive as little as 15 inches per year.[118] The leeward areas have mostly dry warm months and receive most of their rainfall accumulation during the winter storms. The windward regions tend to show smaller seasonal variations because persistent trade wind generated showers govern their rainfall accumulation.[119]

In terms of the city, urban development began with Honolulu Harbor and the surrounding Downtown area, gradually spreading across the coastal plain and slowly creeping into valleys. The smaller communities of Aiea and Pearl City grew up around plantation agriculture and the military bases near Pearl Harbor. Growth in the decades immediately after Statehood brought the development of apartments and higher density areas to Honolulu. This created many new communities to the west, including Salt Lake, Moanalua, Aiea Heights, Waimalu and Pearl City Heights.

As density grew, so did the shopping and industrial districts. Nearly all of the commercial and industrial development, as well as high-density residential development settled in the coastal plains close to the main highways. The older parts

[118] Climate of Hawai`i. Retrieved February 16, 2017, from http://www.prh.noaa.gov/hnl/pages/climate_summary.php
[119] Climate of Hawai`i. Retrieved February 16, 2017, from http://www.prh.noaa.gov/hnl/pages/climate_summary.php

of central Honolulu neighborhoods have a mix of uses and housing types. In Kakaako, for example, the State has established a special redevelopment district, upgrading the street, water, sewer, drainage and utility infrastructure. As a result, Kakaako is gradually transitioning from industrial uses to apartment, office and retail development.

In the Iwilei area, the older industrial buildings are being transformed into new, large-scale retail and entertainment uses. Nearby Kapālama, coupled with Dillingham Boulevard and King Street commercial corridors, continues to provide a small number of retail, service and industrial businesses. Trends in development over the past 30 years have given rise to a number of issues regarding “livability”. Measures of livability range from distance from basic necessities to the feeling of safety when walking along the street.

5.2 Current Plans and Policies Effecting Honolulu

5.2.1 General Land-Use Plan

The general land use plan is the first of a three-tier system: the general plan, the primary urban center plan and the implementation of ordinances and regulations. These three tiers define the objectives, policies, planning principles, guidelines and regulations for each of the different planning areas. The general plan goes over the different aspects of the island: population; economic activity; natural environment; housing; transportation and utilities; energy; physical development and urban design; public safety; health and education; culture and recreation; and government operations and fiscal management.

Both chosen sites, Kalihi-Palama Canal Site and the Kaheka-Keeaumoku Site, lie within the primary urban center plan. This area represents the primary location of Honolulu’s urban development, which houses the majority Hawai’i’s urban population.

5.2.2 Primary Urban Center Plan

The PUC is expected to see a large rise in population and economic growth. As a result, change in policies and regulations is needed to support the expected growth. The PUC extends from the core of downtown to Pearl City in the west and to Waialae-Kahala in the east in addition to all of the transit oriented development planning areas. The key elements of the plan focus on enhancing the natural

resources while creating livable neighborhoods, adding supply to housing capacity, establishing an employment center, creating travel destination and providing a balanced transportation system.

The plan also calls for the development of the current neighborhood centers in addition to creating new centers for gathering, entertainment and recreation. The policy changes mentioned in the plan promotes mixed-use, where commercial and community service uses coexist with residential use, inducing activity and bringing convenient access to services.

5.3 Selecting a Site

As social, economic and social trends change with the population, investments and business have begun to move toward the areas where current major development plans are focused. These areas include Kapolei west Oahu, Kailua and Kakaako. Other areas, that are very much in need, are often passed over. In the site selection for this project, the demographic focus are the people that have been left behind by our economy's rebound. There is a strong link between poverty, urban potential and the impact of people's well-being due to the inability for Hawai'i's people to make ends meet.

Our state spends a large amount of money on health care, human services, and education, yet without addressing the fundamental problem of households' financial insecurity, we will never see a full return on these important investments. A number of factors must be considered when searching for potential sites in the Honolulu urban core that are under the poverty level. In order to deliver resources to those that needed it to the maximum amount of people possible, the most important factors are location and distance from resources. In addition to these factors, the definition of poverty, in the context of Hawai'i, must be examined. The factors that influence and define what being classified as under the poverty line include: the cost of living, inequality, asset security, taxes, hunger and education.

5.3.1 Poverty

Hawai'i has the highest cost of living in the country. Although Hawai'i places tenth highest median income in the entire country, Hawai'i's has the lowest wages when

adjusted by the cost of living for families.[120] It is also the sixth highest rate of poverty in accordance to the Supplemental Poverty Measure, taking into account the cost of living and availability of government assistance.[121] When it comes to poverty, income inequality is the largest factor, much more so than education and race.[122] This income inequality appears in taxes. Compared to the wealthiest 1%, the bottom 20% pay as much as twice their income in taxes. When compared to the rest of the United States, Hawai‘i not only has the second highest overall taxes on low-income households, but also imposes the second highest income tax burden on families under the poverty level. Hawai'i faces the highest cost of housing. As a result, it also has the highest rate of homelessness. Although there are assistance programs for food basic necessities, the participation of citizens in Hawai'i is amongst the lowest in the nation. At the same time, 1 in 8 Hawai'i residents faces food insecurity due to the difficult tradeoffs needed to balance their budgets.[123] Lastly, more than half of the public school students in Hawai'i can be classified as economically disadvantaged, diminishing a student's educational achievement as educational programming cannot overcome the impact of poverty on students.

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[120] Real Personal Income for States and Metropolitan Areas 2014, U.S. Dept. of Commerce Bureau of Economic Analysis. December 12, 2016. <https://www.bea.gov/newsreleases/regional/rpp/rpp_newsrelease.htm

[121] Supplemental Poverty Measure Thresholds: 2014, U.S. Census Bureau. <www.census.gov/hhes/povmeas/data/supplemental/files/ PovertyThresholdLookUp2014values.xlsx.>

[122] Broad-Based Wage Growth Is a Key Tool in the Fight Against Poverty, Elise Gould et al, Economic Policy Institute, May 20, 2015. < www.epi.org/publication/broad-based-wage-growthis-a-key-tool-in-the-fight-against-poverty>

[123] Food Security in the U.S.: Key Statistics and Graphs, U.S. Department of Agriculture. <www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statisticsgraphics.aspx.>

From the U.S. Census Bureau, Hawai‘i has 11.4 percent, 169,000 residents, living under the poverty threshold created by the Census Bureau.[124]

Household Poverty Level	
Household Size	Annual Income
1	13670
2	18430
3	23190
4	27950
5	32710
6	37470

Figure 27 2016 Poverty Guideline[125]

In addition to this, the Census Bureau also calculates this number with their ‘Supplemental Poverty Measure’, which considers an additional 80,000 people to be under the poverty level. In accordance to the U.S Census Bureau’s definition of poverty, there a few areas within Honolulu’s urban core that hold a large percentage of Hawaii’s households that fall below the poverty level. In addition to the poverty level when considering a potential site, access to utilities, education, medicine and healthcare and access to services are other factors that are taken into consideration.

[124] Poverty Status in the Past 12 Months: 2014 American Community Survey 1-Year Estimates (Table S1701), U.S. Census Bureau. <factfinder.census.gov>
[125] Poverty Status in the Past 12 Months: 2014 American Community Survey 1-Year Estimates (Table S1701), U.S. Census Bureau. <factfinder.census.gov>

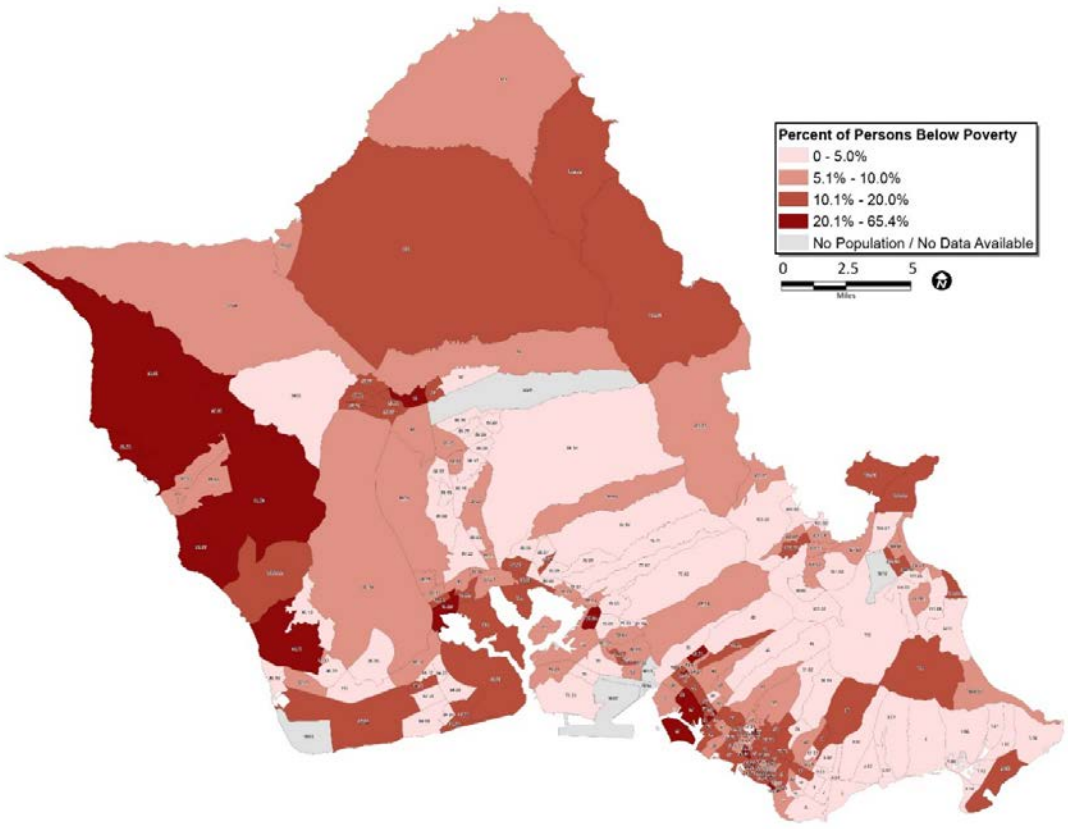

Figure 28 Persons below poverty level[126]

The site selection of areas focused on the areas that were within Honolulu's urban core, sat below the official poverty level and areas whose population density sat above 400 people per square mile.

5.4 Approaching the Interstitial in Honolulu

In the case of Honolulu, there are a number of developments planned and currently going on. Due to the large amount of changes happening to the urban core of Honolulu, the amount of spaces that will go unused and underutilized will rise as construction happens. The period of transition between from what is currently

[126] U.S. Census Bureau, 2007-2011 ACS 5-Year Estimates; extracted by the Hawaii State Data Center, DBEDT.

presiding within the area to what it will be in the future was an important consideration for the site selection.

5.4.1 Site Consideration and Selection

The approach for site selection for this research primarily focused in areas that were slated for redevelopment. In the case of Honolulu, these are the areas adjacent to the future rail transit stations. One primary criteria for selection depended on the type of user that I would be focusing on during the analysis portion of this study. As mentioned in the previous chapter, poverty and homelessness has been a subject of focus in Hawaii. The number of homeless people has grown in recent years, leaving the state with 487 homeless per 100,000 people, the nation's highest rate per capita, according to the Census Bureau's "supplemental poverty measure".[127] The next criteria for site selection as be based on the level of poverty in that area. From these criteria, two sites where chosen; the first at the Kapālama Canal area and the other in the Keeaumoku-Kaheka area.

The areas chose consists of neighborhoods that have been identified with a higher rate of poverty in comparison to the other areas of the state of Hawaii. These areas have access to number of resources that, depending on which resource, is reaching the limit that will be able to sustain that area.

[127] Supplemental Poverty Measure Thresholds: 2014, U.S. Census Bureau. <www.census.gov/hhes/povmeas/data/supplemental/files/PovertyThresholdLookUp2014values.xlsx.>

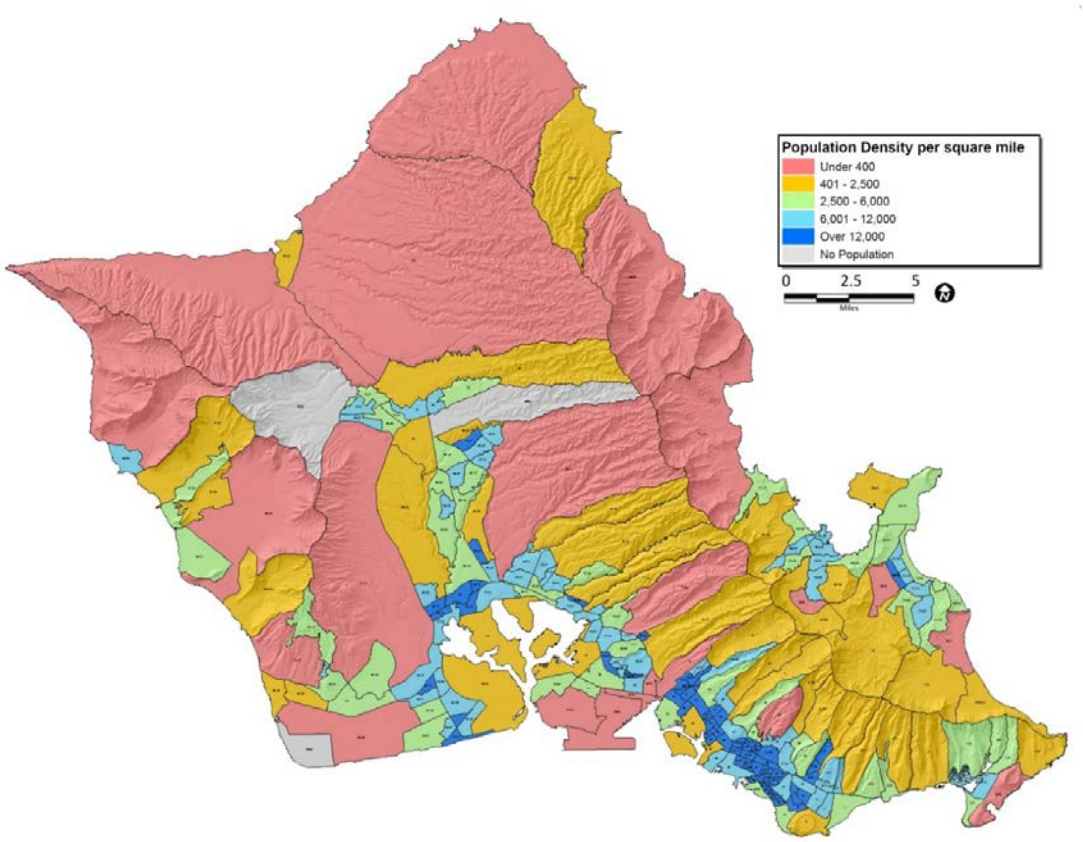

Figure 29 Population density per square mile[128]

These two chosen areas are slated for intense redevelopment as result of the rail stations, Thius will cause some resources that were once available to close for business or relocate. In addition to this, the redevelopment, will create a rise in population in that area, further straining the demand for a number for resources in that area. For the resources and services that may not be lacking in number, may be or will be inaccessible to those of lower income. For example, much of the housing market that is scheduled to be developed in the Kaheka-Keeaeumoku, especially towards the Makai side, is focused primarily on luxury condominiums, which many residents in that area will not be able to afford.

The following chapters will go over the background and history from pre-contact to present, boundaries of the study area, which is a half mile radius around the future rail stations, otherwise considered by planners to be transit catchment areas. A half

[128] U.S. Census Bureau, 2007-2011 ACS 5-Year Estimates; extracted by the Hawaii State Data Center, DBEDT.

mile roughly corresponds to the distance someone can walk in 10 minutes at 3 miles per hour and is a common estimate for the distance people will walk to get to a rail station. The further you travel from the transit station, the intensity of development and population density decreases as much of the higher dense residential buildings are or will be located near these transportation nodes.

6 Kalihi-Kapālama Canal Site Analysis

6.1 Introduction

In the Kapālama Canal Area, various projects are underway. In addition to the General Land-Use Plan and the Primary Urban Center Plan, there exists then Kalihi-Palama Action Plan and the Kalihi Neighborhood Transit Oriented Development Plan, all of which provide a series of spaces that improve the public spaces of the area, supporting the communities' vision that addresses a greener infrastructure that improves water quality, erosion control, and canal-edge stabilization. As a whole, the intent of these projects aim to catalyze improvements to the neighborhood through TOD development that is centered on the scheduled Kapālama transit station.

Figure 30 Kalihi-Kapālama canal site satellite image[129]

The canal area is approximately one mile long located in the Kapālama ahupua'a. The canal itself is manmade, constructed in 1938, through financial assistance from the Federal Works Administration program. Since the 1900's, the Kapālama canal area has gone through large transformations, from a loʻi floodplain to a working and industrial neighborhood.

6.1.1 Background and History

The Kapālama ahupuaʻa is situated between Nuuanu to the east and Kalihi to the west. The area is supplied by two streams, the Kapālama and Niuhelewai. The mauka area, the area towards the mountains, is known today as Kapālama Heights. Fishponds comprised the eastern banks of Kapālama's makai region. A pond called

[129] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

Kūwili was located on the eastern edge of Kapālama. Kūwili was a loko pu‘uone, a type of fishpond that’s closed off from the sea by a bank of sand. [130]

The name for an area can tell us something about its historical significance, and that is true for Kapālama. The root of *Kapālama* is *pā lama*. Lama is an endemic tree, a member of the ebony family.[131]Traditionally, it had many ceremonial and fishing-related uses. It was used to construct fish traps and sluice gates that trapped larger fish in fishponds.[132]

Lama is also the word for *torch*, which fishermen used for night-fishing. Lamakū were large, lighted structures that stood along shorelines and helped fishermen find their way back to shore. The pā lama played an important role in the mating rituals of the high chiefs. After a young ali‘i couple married, and prior to consummation, they would be separated and placed under the care of a guardian within a pā lama. Various rituals would be performed to ensure a successful mating.[133] The name Kapālama is a link to this ancient practice. It’s here where these important mating rituals once took place.

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[130] *Ka Hana Lawai‘a a me nā Ko‘a o nā Kai ‘E*
walu: A History of Fishing Practices and Marine Fisheries of the Hawaiian Islands . Prepared for The Nature Conservancy by KumuPono Associates, Hilo, Hawai‘i. p277
[131] Sterling, E. P., & Summers, C. C. (1962). Sites of Oahu. Honolulu: University of Hawai’i Press. P319,
[132] Andrews, Lorrin. A dictionary of the Hawaiian language. Honolulu: Henry M. Whitney, Printer, 1865. Revised by Henry H. Parker as the Andrews-Parker Dictionary of the Hawaiian language, 1922. Reprinted by Charles E. Tuttle Co., Tokyo, Japan and Rutland, Vermont, 1974. p.354
[133] Sterling, E. P., & Summers, C. C. (1962). Sites of Oahu. Honolulu: University of Hawai’i Press. P319,

Figure 31 Kalihi-Kapālama canal stream, fishponds, kuleana regional map

Historically, Kapālama was a highly productive ahupua'a. The floodplain, fed by the Kapālama and Niuhelewai streams, supported an extensive lo'i system that once covered the area between Iwilei up to the foothills above School Street.[134] Further up mauka were forested areas where 'iliahi (Hawaiian sandalwood) grew. The fragrant wood was harvested extensively between 1810 and 1830 and used for trade and export with Asia.

Shortly after establishing rule over O'ahu near the end of the 18th century, Kamehameha the Great spearheaded restoration of the many lo'i that had been damaged or abandoned during the wars. He set aside several large tracts, including areas in Kapālama, to replenish the food supply.[135]

During the Māhele, the ahupua'a of Kapālama was awarded to Moses Kekūāiwa, a grandson of Kamehameha I. The land passed through several ali'i estates before ending up in the estate of Bernice Pauahi Bishop. Individual kuleana lots within Kapālama were awarded to the maka'āinana residents of Kapālama pursuant to the 1850 Kuleana Act. There were roughly 100 kuleana awards in Kapālama. A map from 1885 denotes the various kuleana plots spread across the Kapālama plain. A patchwork of habitation and farming sites is clearly visible. [136]

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[134] Sterling, E. P., & Summers, C. C. (1962). Sites of Oahu. Honolulu: University of Hawai'i Press. P320

[135] Kamakau, Samuel Manaiakalani. 1992 *Ruling Chiefs of Hawai'i.* Revised edition. Kamehameha Schools Press, Honolulu.

[136] Kame'eleihiwa, Lilikala 1992 *Native Land and Foreign Desires. Pehea La E Pono Ai?* Bishop Museum Press,

During Hawai‘i’s territorial years, coastal and central Kapālama, along with neighboring Kalihi, evolved into an outer suburb of fast-growing Honolulu. The area is typically lumped together as Kalihi-Kapālama or Kalihi-Pālama. For a time, it was still quite rural. The land along both sides of the Niuhelewai Stream were extensively farmed well into the 1920s. Interspersed among the dwellings were lo‘i kalo, rice paddies, truck farms, and home gardens. [137]

Sugarcane and dairy farming comprised lower Kapālama. The fields were managed by the Honolulu Sugar Company, and the cane would be carried out to its ‘Aiea mill by train. The fields stretched from the Waiakamilo/Houghtailing area east to as far as where Dole Cannery currently is located. Operations began phasing out in the late-1920s.

One of the first residential subdivision developments in Kapālama was known as the McInerny Tract, located mauka of the canal, a few blocks above School Street, on land that had been planted with pineapple. It was surveyed and subdivided in 1914, with its first residents moving in a year later.[138] The bulk of residential development in the Kalihi-Kapālama area occurred between 1911 and 1920, when approximately forty subdivisions opened up.[139] This period coincides with a wave of Japanese plantation workers moving from the plantations to the city. Back then, they were the area’s newcomers, arriving after the Portuguese and Chinese. Many of the Hawaiian residents were kama‘āina to Kapālama. Most of the residential development during this period occurred in areas mauka of King Street and ewa of Kalihi Street, where ground and infrastructure conditions were better.

Kapālama Canal was built by the City and County of Honolulu with financial assistance from the Federal Public Works Administration program in 1938. The canal

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Honolulu. P59

[137] Pukui, Mary K., Samuel H. Elbert, and EsHandy, E.S. Craighill and Elizabeth G. Handy 1972 Native Planters in Old Hawaii: Their Life, Lore, and Environment. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.ther Mookini 1974 Place Names of Hawaii. University of Hawaii Press, Honolulu. P79.

[138] Pukui, Mary K., Samuel H. Elbert, and Esther Mookini 1974 Place Names of Hawaii. University of Hawaii Press, Honolulu.

[139] Pukui, Mary K., Samuel H. Elbert, and Esther Mookini 1974 Place Names of Hawaii. University of Hawaii Press, Honolulu.

roughly follows the original course of Niuhelewai Stream to the receiving waters of Honolulu Harbor. It was conceived as a flood prevention measure; the stream's periodic flooding was becoming a nuisance as the surrounding area became more populated.[140]

Development of lower Kapālama happened during and after the War, which hastened civil work projects at Honolulu Harbor and the surrounding Kapālama Basin. The state's Department of Transportation acquired the 63- acre parcel in 1990 and used it as a fallback relocation site for any businesses impacted by the government's exercise of eminent domain. Improvements to the site are presently underway to turn it into an overseas container terminal. It was only after industrial lands in central Honolulu became scarce that the large landholdings in the lower Kapālama became economically attractive to develop. They were subdivided into large lots and turned into the strip malls, warehouses, big box stores, and commercial and industrial complexes we see today.

6.1.2 Location and Boundaries

The study area for this analysis is the immediate urban area around the Kapālama Canal from Nimitz Highway to the H-1 Freeway to the north. The boundary of study area to the east of the Canal is Waikamilo Road and to the boundary to the west is Alakawa Street.

[140] UH (University of Hawai'i, Oral History Project) 1984 *Kalihi: Place of Transition.* Vols. I–III. Ethnic Studies Oral History Project, Social Science Research Institute, University of Hawai'i at Mānoa, Honolulu.

Figure 32 Kapālama station and TOD walking radius

Throughout this plan, a ½-mile (2,600-foot) radius is drawn around each of the three stations to approximate a ten-minute walking distance, generally an acceptable maximum walking distance from transit. A ¼-mile (five-minute) walking distance is also drawn to highlight the sites closest to the stations. The plan generally uses the ½-mile radius to address transportation improvements, urban design recommendations, and infrastructure needs, though some portions of the area are excluded due to inaccessibility.

6.2 Land Use and Infrastructure

6.2.1 Ownership and Landowner Development Plans

The site location and the area under analysis are areas directly adjacent to the canal. Land in the site location is primarily owned by Kamehameha Schools and other city, state and federal public agencies. Other public agencies include the University of Hawaii, the Department of Hawaiian Homelands and the Hawaii Department of Transportation.

Figure 33 Kalihi- Kapālama site major landowers

As the largest private landowner of Hawaii, Kamehameha Schools owns around 91 acres in the planned area proposed in the city's strategic plan for Kapālama with about half of the land immediately adjacent to Kapālama Canal.[141] The plan includes options for a linear park along Kohou Street, as well as development plans for

[141] 1 Kamehameha Schools. "Kapalama Strategic Implementation Plan" 1.0 Background: 1.

particular parcels along the Canal with lease expiration ranging from 2017 to 2038.[142]

In HCC's Long Range Development Plan for their 25.9-acre main campus, which includes a new Advanced Technology and Training Center, a parking garage on the old Incinerator site, and campus reorganization that integrates the future Kapālama transit station at the corner of Kōkea Street and Dillingham Boulevard into a gateway for the campus.

Figure 34 Honolulu Community College preliminary plan[143]

Preliminary plans show a landscaped median planted with loulu palms separating the vehicle turn-out from Kōkea Street, marking the main pedestrian entry into the campus, and drawing pedestrians into a double row of loulu palms that creates a promenade into the campus. Further mauka, a park-like edge will be created to encourage more vibrant pedestrian usage. A 50-foot setback between the planned Kōkea Street parking garage and the street will feature lush plantings. Relocated mahogany trees will extend along the Kōkea Street edge to continue the row of existing street trees. HCC also owns a 6.5-acre parcel on the Kōkea Street campus a

[142] Kamehameha Schools. "Kapalama Strategic Implementation Plan" 1.0 Background
[143] Kamehameha Schools. "Kapalama Strategic Implementation Plan" 1.0 Background

few blocks makai of the main campus, which consists of surface parking with medians planted with a variety of medium-canopy shade trees.

Figure 35 Honolulu Community College future development [144]

DHHL owns roughly 5 acres of IMX-1 (Industrial Mixed Use) zoned land in the Kapālama area close to Nimitz Highway that currently houses an office building, a portion of a shopping center, a radio station antenna tower, and an industrial fresh produce facility. The office building and the shopping center are under a long-term general lease scheduled to expire in 2045. The fresh produce facility is also under a general lease scheduled to expire in 2070, while the radio station's license i scheduled to expire in 2029.

6.2.2 Land Use and Zoning

The Kapālama station area today is low-intensity, has large floor plate buildings, underutilized large blocks, and missing sidewalks in many locations. It has the potential to be transformed into a vibrant high-intensity, walkable mixed-use district, in which Kapālama Canal becomes a public amenity and Honolulu Community College serves as an educational hub.

[144] Kamehameha Schools. "Kapalama Strategic Implementation Plan" 1.0 Background

Achieving the goals envisioned by the Kalihi-Pālama Action Plan, the area will require new streets to improve connections to the rail stations, and the expansion of residential uses to create a critical mass of residents. It will also require the development of retail and office functions as incubators in order "activate" the streets in addition and new open spaces and facilities to that make the area more livable and increase the quality of life.

As shown in the existing land-use map and observations of the area, the Kapālama station area is characterized by retail use, industrial use and the presence of Honolulu Community College. There are several older retail buildings and shopping centers along Dillingham Boulevard with small and medium-sized tenants and surface parking. A range of retail services are provided, including restaurants, fast food, groceries, karaoke clubs, gas stations, self-storage, and student-oriented services. The makai and mauka of Dillingham Boulevard are commercial use, warehouse use, import, woodworking, hardware stores and contractor supplies.

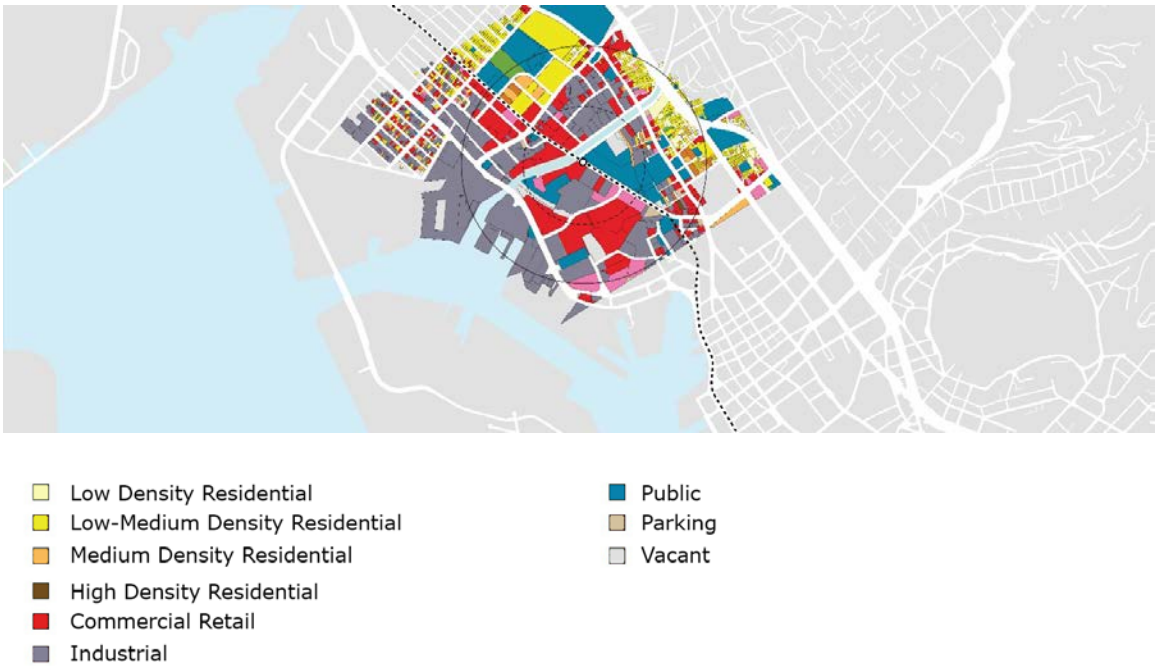

Figure 36 Existing land use[145]

Sites that have the most potential are the properties that are vacant or considered underutilized due to low building intensities or low building value relative to land

[145] City/County of Honolulu, Department of Planning & Permitting, 2008; Dyett & Bhatia, 2011

value. Additionally, public and private stakeholders, as well as community members, have identified several sites during the community outreach events and existing conditions analysis phases that have potential for transit-oriented development. These sites are the focus for transit-related improvements to sidewalks, streets, landscaping, and other amenities that can encourage walking, biking, and transit use.

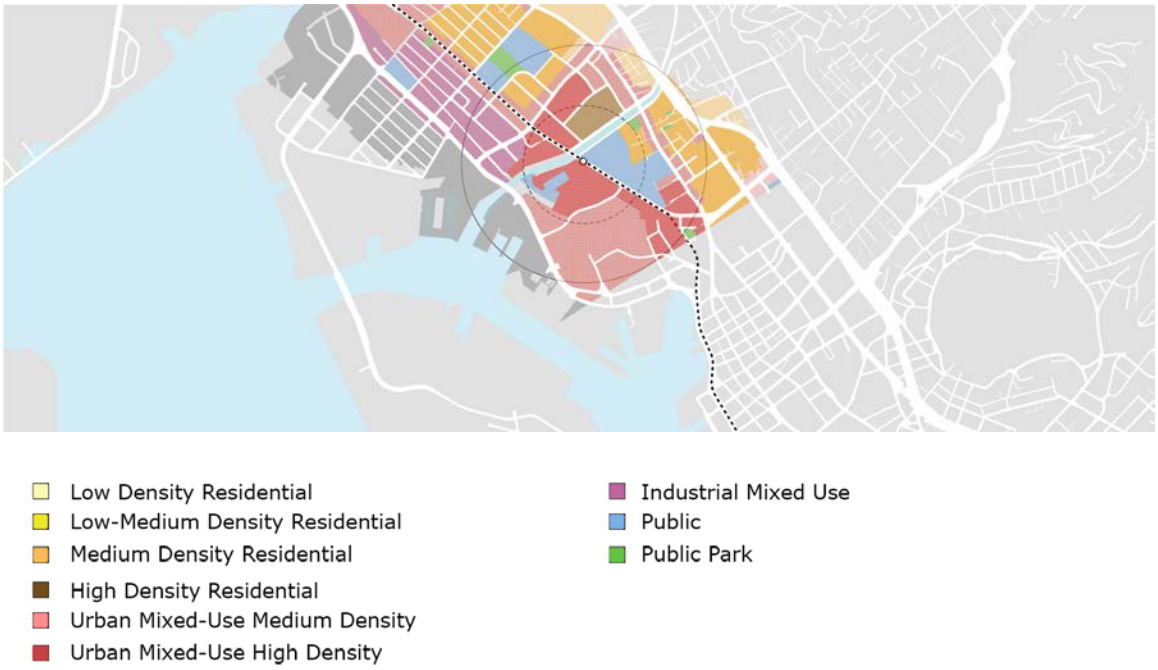

Figure 37 Proposed Land use

The most substantial land use changes are proposed in the Kapālama station area, where new residential uses along the canal and a new mixed-use district makai of the station are envisioned. As a result, the tallest building heights are proposed in the Kapālama station area, stepping down away from the station and toward the water-front.

Based on this data, the area around Kapālama station has the most opportunity for redevelopment given the amount of open surface land, low-intensity warehouse uses, and consolidated large landowner ownership that would allow for easier lot consolidation. Opportunities are more limited in the Kalihi and Middle Street station areas, where a majority of the lots are small and there are too many individual owners.

Honolulu Community College is a significant landowner in this portion of the Canal, the amount of existing traffic by students make the corner of Dillingham and Kōkea, a major hub of activity The Kapālama Shopping Center, also located at the corner of Dillingham Boulevard and Kohou Street, and the proposed location of the future rail station on HCC's campus suggest that the intersection of the Canal at Dillingham has the potential of becoming a highly trafficked community gathering space.

On Kōkea Street, an uncurbed compacted dirt/gravel surface once used for parking along the Canal, but has since been fenced off, with the uncurbed condition likely draining stormwater directly into the Canal. On the ʻewa side of Kōkea Street is a concrete sidewalk and un-metered on-street parking on the mauka portion while on the makai half, an uncurbed compacted dirt/gravel surface is used for perpendicular parking in the right of way fronting Honolulu Community College. Unmetered on-street parallel parking exists on both sides of Kohou Street, and a curbed landscaped area separates the Canal from the street. Above ground utility lines and street lights run on the non-Canal sides of Kohou and Kōkea Streets.

6.2.3 Transportation and Mobility

According to the proposed plans, the Kapālama station will be elevated above the Diamond Head side of the intersection of Dillingham Boulevard and Kokea Street, accessible from the bus stops on both the mauka and Makai sides of the boulevard. The station is being designed to allow a future station entrance on the makai side of the street as well. Bus stops will also be located on both sides of Dillingham Boulevard. Currently, six bus routes go through this area, going down to three when the rail becomes functional.

Currently, many workers commute long distances to jobs Downtown and in Kalihi. Construction of the rail system will result in greater demand for housing close to transit on Oahu as people seek to minimize the distance, time and cost of travel. Locating this housing in attractive mixed-use neighborhoods and near jobs, stores, and cultural/entertainment amenities can further increase the desirability and market acceptance of housing closer to transit.

Figure 38 Transit Commute time

Walking conditions in the Kapālama station area are influenced substantially by the presence of Kapālama Canal. The only crossing of the stream for any transport mode within the ¼-mile area is Dillingham Boulevard. To access the station, pedestrians will have to use the sidewalks and crosswalks along Dillingham Boulevard.

There are no bicycle facilities in the area, so bicyclists tend to use the narrow shoulders and sidewalks making it pedestrians. Other factors include numerous heavily-used driveway entrances and exits on the west side of the stream and vehicles parked on these driveways or on the sidewalk.

6.2.4 Residential

Residential construction activity in Honolulu has declined over the past several years, even preceding the national recession. Furthermore, despite high demand for rental housing opportunities in the urban core, there has been almost no new development for market rate rental apartments in years, a reflection of the discrepancy between the values of for-sale condominiums versus those supported by apartment rents.

Within this portion of the proposed rail system, the area is estimated to capture 1.9 percent of new housing in Honolulu in the next 25 years, compared to 1.1 percent with-out rail. Generally, it is expected for higher-density developments to occur in the areas immediately around the Kapālama station due to the given long-term redevelopment plans of the Kamehameha Schools properties and planned Honolulu Community College improvements.

6.3 Demographic

The state of Hawaii census is divided into different tracts. The tract in which our site focus is in is tract 57, the Iwilei-Anuenue tract. Although some data from the census include areas from outside the site location, statistics and projections for a similar area and can be used to indicate the makeup and characteristics of current residents.

Demographics for Kapalama Canal Area				
Characteristics	Kapalama		Hawaii	
Subject	Number	Percent	Number	Percent
SEX AND AGE				
Total population	6749	100.0	1,360,301	100.0
18 years and over	5,331	79.7	1,056,483	77.7
65 years and over	1461	21.6	195,138	14.3
White	180	2.7	336,599	24.7
Black or African American	27	0.4	21,424	1.6
American Indian and Alaska Native	6	0.1	4,164	0.3
Asian	5290	78.4	525,078	38.6
Native Hawaiian and Other Pacific Islander	481	7.1	135,422	10.0
Two or More Races	730	10.8	320,629	23.6
HOUSEHOLDS BY TYPE				
Total households	1862	100.0	455,338	100.0
Average household size	4	(X)	2.89	(X)
Average family size [7]	4	(X)	3.42	(X)
Total housing units	1909	100.0	519,508	100.0
Occupied housing units	1862	97.5	455,338	87.6
Vacant housing units	47	2.5	64,170	12.4
HOUSING TENURE				
Occupied housing units	1862	100.0	455,338	100.0
Owner-occupied housing units	712	38.2	262,682	57.7
Education Attainment				
% High School Graduate or Higher	64%	85%	1237873.91	91%
% Bachelor's Degree or Higher	10%	28%	408090.3	30%
Transportation				
Mean Travel Time to Work (minutes)	26		27	

Figure 39 Kalihi- Kapālama demographic[146]

[146] U.S. Census Bureau, 2007-2011 ACS 5-Year Estimates; extracted by the Hawaii State Data Center, DBEDT.

7 Kaeeaumoku-Kaheka Site Analysis

7.1 Introduction

The Keeaumoku-Kaheka sub-district area is located in the Ala Moana neighborhood. Not only a high employment zone, it is also an area slated for intense residential development, aimed at high income buyers. The Ala Moana Center, makai of the site, is the chief attraction for locals and tourists alike. Another is the Hawaii Convention Center, to the east of the site. In addition to Ala Moana Center, Walmart, Sam's Club and Don Quijote serve the various residential neighborhoods in the adjacent areas. Despite holding a wealth of resources, there is considerable stock of underutilized lands that of potential for redevelopment.

Figure 40 Kaeeaumoku-Kaheka site satellite image [147]

7.1.1 Background and History

The area in which the site is focused was once named Kâlia. It was understood to have extended as far west as what is now Piʻikoi. It was a place where Native Hawaiians initially prospered as cultivators. It was originally the wettest area of the south shore of Oahu. The Piʻinaio Stream fed the fishponds that were once in that area. Kâlia was perhaps the richest source of fish, shellfish, and seaweed, providing resource for the area.

Much of this agricultural activity was compromised as urbanization grew. These developments, supported by the US military, filled the fishponds to make way for a

[147] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

military reservation and the adjacent entertainment district. Today, the area is hyper-developed, catering to tourists and shoppers of mid to high income levels.

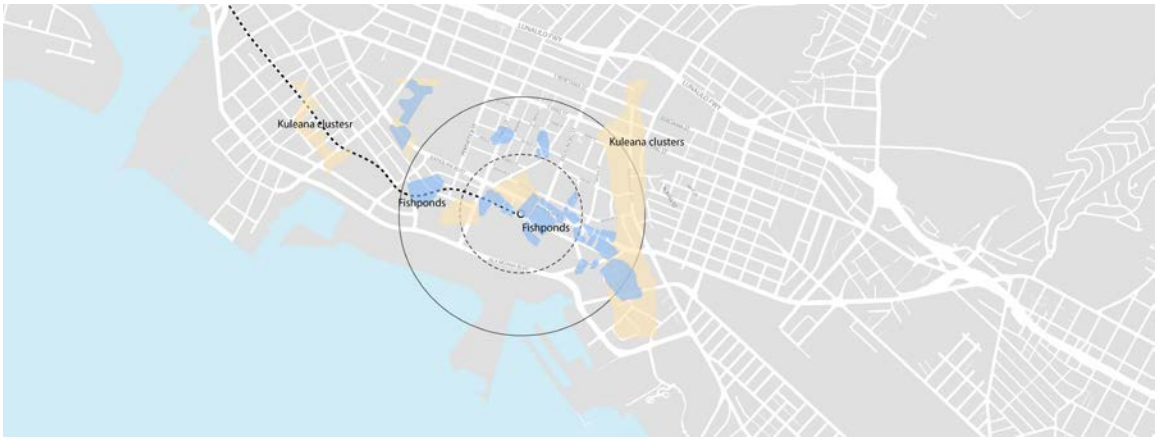

Figure 41 Kaheka-Keeaumoku fishponds, kuleana regional map

The original fishponds demonstrate the economic and environmentally efficient food production by the Native Hawaiians. When the fishponds did not produce enough, ocean fishing supplemented their food production.[148] Oral tradition maintain that Chief Kalamakua, from the first half of the fifteenth century, developed the area's aquacultural system, which was built by maka'âinana, the people who lived on the land.[149] Mahele records show that these fishponds were owned by both the ali'i and maka'âinana, showing equality between the upper and lower branches of society during the time.[150]

By the later nineteenth century, much of the Native Hawaiian population were eradicated due to disease. This led to the farmers to be predominantly Chinese immigrants. Although Kâlia's fishponds no longer functioned within an integrated

[148] Kikuchi, W. K. "Hawaiian Aquaculture Systems." Ph.D., University of Arizona, 1973.
[149] E. S. Craighill Handy and Elizabeth Green Handy (with Mary Kawena Pukui), Native Planters in Old Hawai'i: Their Life, Lore, and Environment, rev. ed. (Honolulu: Bishop Museum Press, 1991), 484
[150] E. S. Craighill Handy and Elizabeth Green Handy (with Mary Kawena Pukui), Native Planters in Old Hawai'i: Their Life, Lore, and Environment, rev. ed. (Honolulu: Bishop Museum Press, 1991), 481

agricultural system overseen by the Hawaiian people, the agriculture supplemented the resources obtained from the ocean until the ponds were filled.

Much of the production power slowed and stopped as military and businessmen began to develop the area. As early as the 1850's foreigners made up a significant portion of the population, mainly around the now- Fort DeRussy.[151] These developers and military engineers reclaimed a once productive wetlands that had nourished the Hawaiian people for centuries. This led to many of Kâlia's residents ended up squatting in areas around the coast.

There are a number of memorials in the area that relate to Kâlia's former fishpond grounds. One is located at For DeRussy, honoring Robert T. Kuroda. The second memorial is a document recording the work of the Native Hawaiians that built and managed the irrigation system and fishponds that functioned in the area.

7.1.2 Location and Boundaries

The site focus is located within a ½ mile distance, a study margin area proposed by transit oriented department studies, to the future Ala Moana Center station. It is the easternmost of 21 stations spanning the 20 mile length of the proposed rail project. This station will serve the Ala Moana neighborhood, prominently located in the center of urban Honolulu. The Ala Moana neighborhood itself is situated between Waikiki to the east and Kakaako, located directly to the west.

The Keaeumoku portion of the area is mainly occupied by offices, small retail, restuarants, entertainment establishments and a number of big box retail such as Sam's Club and Walmart. On the other side, the Kaheka is populated with mixed use buildings in addition to the large number of high-rise apartment buildings.

7.2 Land Use and Infrastructure

7.2.1 Ownership and Landowner Development Plan

Much of the area owned primarily by private landowners and parcels are smaller in comparison to the Kapālama Canal site. The single largest private land owner is General Growth Properties, the owner and operator of Ala Moana Center. In addition to the shopping mall, they also own a number of properties along Kapiolani

[151] Davis, Subsurface Archaeological Reconnaissance, 31, noting Land Grant 2634 of 1850 to Alice Montgomery.

Boulevard. Another major landowner is Walmart Realty, the owner of Walmart and Sam's Club, whose property lies in the site study area. Don Quijote USA Co LTD and Cuzco Development are the last of the major private land owners in the area. Majority of the land are either public or smaller plots.

In terms of state agencies, the most substantial public land owners in the area would be the Hawaii Community Development Authority, the Hawaii Housing Finance and Development Corporation, the Hawaii Public Housing Authority, the Department of Land and Natural Resources and the Department of Transportation. Lands under state ownership would include Ala Moana Beach Park and Kalakaua Public Housing. The lands under city ownership include Sheridan Community Park and Pawaa Park. The remaining parcels under public ownership are parcels associated with the construction of the elevated guideway for the rail project.

7.2.2 Land Use and Zoning

As a major center of commercial and residential features in Honolulu's urban core, the Ala Moana district is a major shopping node for the surrounding area. Majority of commercial activity is located at the Ala Moana center. The secondary shopping node is the Walmart and Sam's club on the mauka side of Ala Moana center. The proposed station is situated directly between these two nodes.

Figure 42 Kaheka-Keeaumoku existing land use[152]

[152] City/County of Honolulu, Department of Planning & Permitting, 2008; Dyett & Bhatia, 2011

The proposed Ala Moana Center station, situated on the mauka side of Ala Moana Center, is located between all of these nodes. ‘Ewa of Ala Moana Center, another commercial node is the Ward Centers retail and entertainment development, which will be served by the Kakaako rail station. In addition to these shopping attractions, Kapiolani Boulevard acts a lower intensity commercial activity node. Kapiolani Boulevard houses the older, lower rise buildings, accommodating smaller retail and dining establishments. Due to the construction of the rail station, much of these establishments will most likely be slowly replaced by higher value buildings.

Figure 43 Kaheka-Keeaumoku proposed land use[153]

In general, building heights within the study area fall well below the max building height limitations. These buildings represent an underutilized opportunity as it is possible for considerable development.

Majority of the high rise buildings are located along Kapiolani Boulevard. A number of tall commercial and residential buildings lie interspersed within the low-rise residential areas, warranting discussions on transitions in scale.

[153] City/County of Honolulu, Department of Planning & Permitting, 2008; Dyett & Bhatia, 2011

7.2.3 Transportation and Mobility

Bus stops are conveniently located near neighborhood attractions. Much of the streets in the study focus conform to a tight orthogonal grid. Unfortunately, the superblock commercial nodes pose an interruption to connectivity. The block consisting of Blaisedell center and Mckinley Highschool and Ala Moana center are such examples.

7.2.4 Residential

The Kaheka portion of the site is the Ala Moana district's densest residential area. This area is known largely for its elderly population which includes the elderly living at the Kalakaua public housing projects. For much of the residents in the area, there is fear the development will lead to the emphasizing of luxury residential developments that will reduce the stock of affordable housing.

In terms of rental properties, there has been very little additions to the number of market rate apartments. This reflects the inconsistency between the value of condos and rental apartments.

7.3 Demographic

This area has large amount of elderly and a smaller amount of younger people when compared to the rest of the state. The area also is home to a large number of foreign residents, primarily from Korea. This has led to the designation of Keeauemoku as a "Koreatown" due to their influence on the area. Many Korean immigrants live similarly to those back in Korea, where majority of citizens commute via public transit. This, in addition to the large number of elderly residents, account for the large number of public transit.

Demographics for Kaheka-Keeaumoku Area				
Characteristics	Kapalama		Hawaii	
Subject	Number	Percent	Number	Percent
SEX AND AGE				
Total population	9,435	100.0	1,360,301	100.0
18 years and younger	1,186	14.2	195,138	14.3
65 years and over	1,949	20.2	195,138	14.3
White	1,293	14	336,599	24.7
Black or African American	96	1	21,424	1.6
American Indian and Alaska Native	9	0.1	4,164	0.3
Asian	6,246	63	525,078	38.6
Native Hawaiian and Other Pacific Islander	559	6	135,422	10.0
Two or More Races	1,173	12	320,629	23.6
HOUSEHOLDS BY TYPE				
Total households	5,460	100.0	455,338	100.0
Average household size	2	(X)	2.89	(X)
Average family size [7]	3	(X)	3.42	(X)
Total housing units	1909	100.0	519,508	100.0
Occupied housing units	1,379	93.1	455,338	87.6
Vacant housing units	376	6.9	64,170	12.4
HOUSING TENURE				
Occupied housing units	5,084	93.1	455,338	100.0
Owner-occupied housing units	1,379	27.1	262,682	57.7
Education Attainment				
% High School Graduate or Higher	8302.8	88	1237873.91	91
% Bachelor's Degree or Higher	3396.6	36	408090.3	30
Transportation				
Mean Travel Time to Work (minutes)	19		27	

Figure 44 Kaheka-Keeaumoku demographic[154]

In terms of commuting, nearly half of the workers who reside in the area commute to work via public transit, compared to 36%. When compared with the rest of the island, most of the households are renters.

[154] U.S. Census Bureau, 2007-2011 ACS 5-Year Estimates; extracted by the Hawaii State Data Center, DBEDT.

8 Opportunities in Mapping the Interstitial

In order to understand what resource are needed for each of the site, an investigation is needed of what resource are already existing within each of the site. The gathered data was data-mined from social networks. These social networks aid in the development of the market economy in the specified area through its crowd-sourced reviews and geo-tagging possibilities. Through this, it is possible to log business and locations that would often be missed.

The following sections within this chapter map known resource that include but not limited to:

- Care and Essentials: Business that provide day cares, pharmacies, hospitals, urgent care, pediatricians, health clinics, shelters and public service organizations
- Activities and Recreation: Businesses and spaces that provide ability and access to recreational activities such as basketball courts, open spaces for exercise and gyms.
- Arts and Entertainment: Businesses and areas that provide enjoyments such as movie theaters, game centers, club hobby groups, dance stages, art studios and murals.
- Cafes: Business that provide drinks or coffee and light meals or snacks.
- Grocery: Business that sell fresh or locally made food products
- Restaurants: Businesses that allow that serve food to be eaten on the premises.
- Nightlife: Businesses that provide social venues for activities mostly done in the evening, such as bars, karaoke and clubs. Also includes bars within restaurants.
- Relaxation: Business that provide services pertaining to the body. This includes nail and hair salons, barber shops, make-up salons, massage therapist, tattoo parlors, etc.
- Shopping and Retail: Business that provide goods for use and consumption that are not food products.
-

The first step in the analysis was to geocode and map lists of the total number of business in the area to examine the coverage by business type and assess the business service area for that area's demographic. The datasets from each source vary and a number of business missing from one dataset may appear in another. This was one reason why multiple datasets were needed as sources.

Data sets:

- Yelp: The yelp dataset has a variety of businesses on which user gives reviews and star ratings.
- Facebook: A number of business use facebook to market themselves by creating a 'facebook' page and categorizing themselves in order to reach a larger number of user demographic they aim for.
- Foursquare: Foursquare is primarily for letting users know where they are by tagging themselves to a location. Majority of locations used by people to geo-tag themselves are places of business.

The data was then have to examined and organized. The data was mined and parsed using a software called Octoparse, a web scraping software that extracts the html data from websites into structured tables. The data that is collected is collected in the form of table showing type of business, business name, neighborhood, address, city, state, longitude, latitude and category. Once organized, the data was sorted by category and, through the longitude and latitude extracted from the datasets, were imported into Google Earth.

8.1 Kalihi-Kapālama Site

The Kapālama area is made up of a diverse group of people, the majority of which are Chinese, Filipino, Pacific Islander and Korean. Due to a lower household income when compared to the state, households in the surrounding area tend to be both multi-family and multi-generational. Additionally, because the area is conveniently located near downtown and relatively inexpensive when compared to the rest of the state, it is popular for families and immigrants.

There is a mix of uses throughout the site area with public, industrial uses, big-box retail shopping centers and educational uses around the Kapālama station. With the incoming development in transforming this area into a higher density area, the number of people with grow and the lack of resources will be exacerbated as business close down for construction. Much of the existing structures are falling into disrepair as 24 percent of the building stock was constructed before 1945, and only ten percent has been constructed since 1990. In the half mile radius around the site area, the average age of structures is more than 50 years. Adjacent to many of the big box retail stores are small business and residential, mostly "mom'n pop" shops and a variety of housing types which reinforce the area's social and cultural identity.

The following section will identify nodes of resources and amenities that affect the economy of the area. The source of data for this section is obtained from social data such as Yelp, Foursquare, and Facebook along with physical observation.

8.2 Resource Mapping for Kalihi-Kapālama Site

8.2.1 Care and Essentials Map

Figure 45 Kalihi-Kapālama site, map of care and essentials, regional

8.2 Resource Mapping for Kalihi-Kapalama Site

8.2.1 Care and Essentials

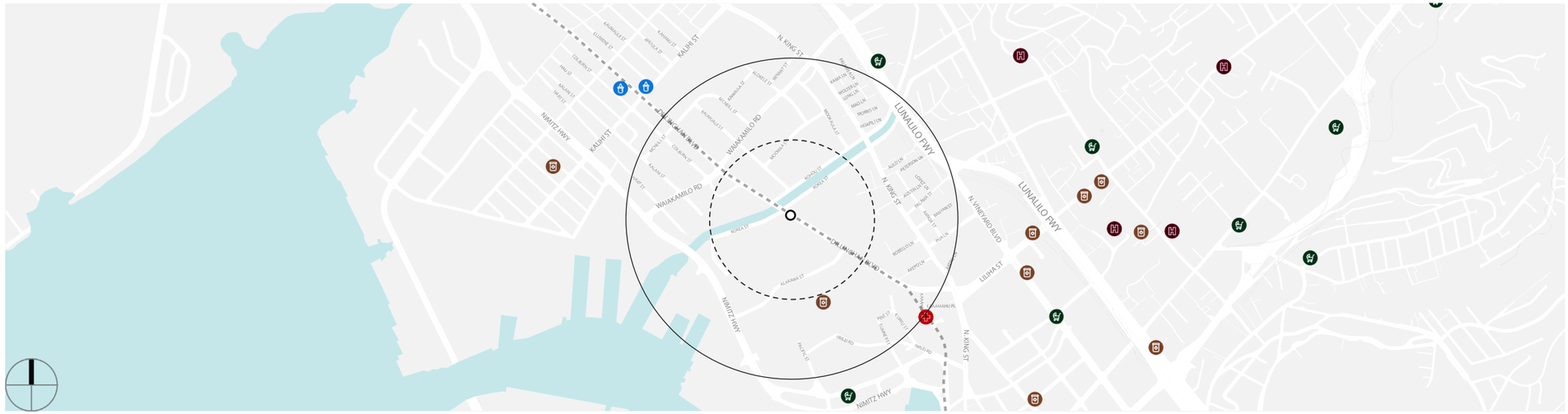

Figure 45 Kalihi-Kapālama site, map of care and essentials, regional

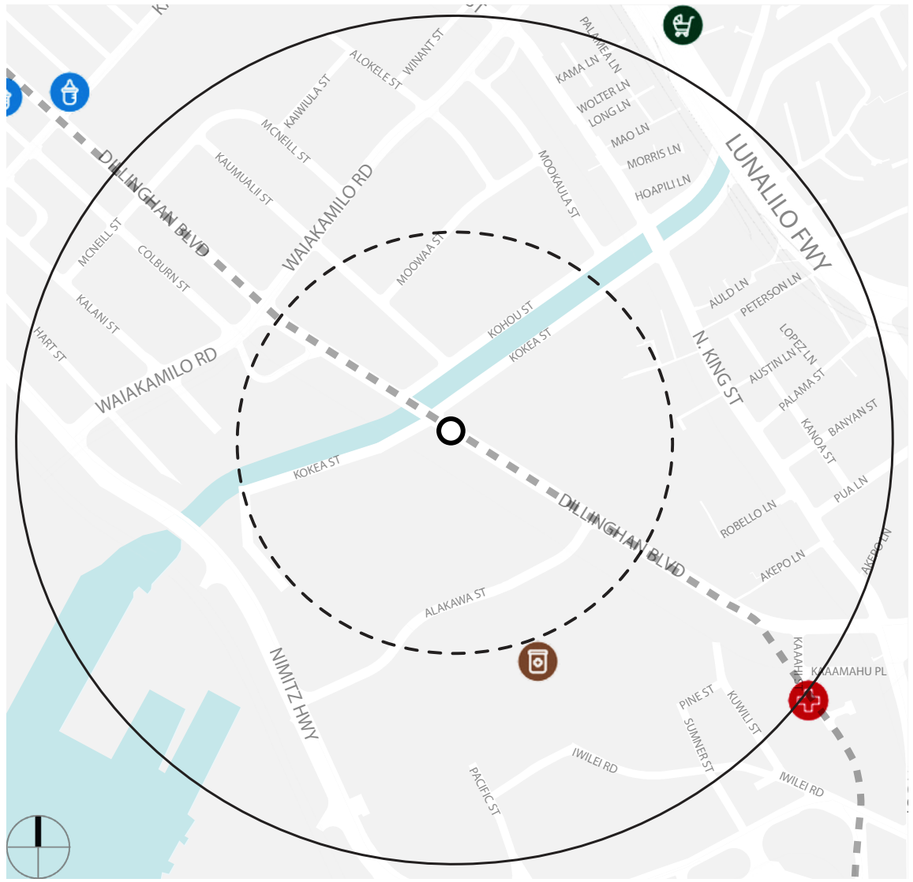

Figure 46 Kalihi-Kapālama site, map of care and essentials, zoomed to site

8.2.2 Activities and Recreation

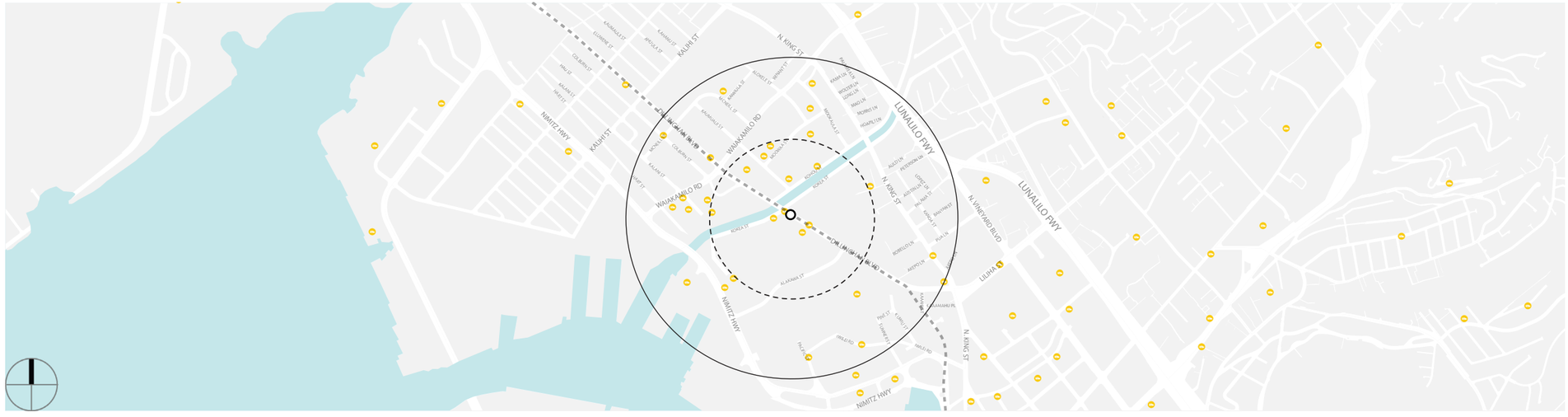

Figure 47 Kalihi-Kapālama site, map of activities and recreation, regional

Figure 48 Kalihi-Kapālama site, heatmap of activities and recreation, regional

Figure 49 Kalihi-Kapālama site, map of activities and recreation, zoomed to site

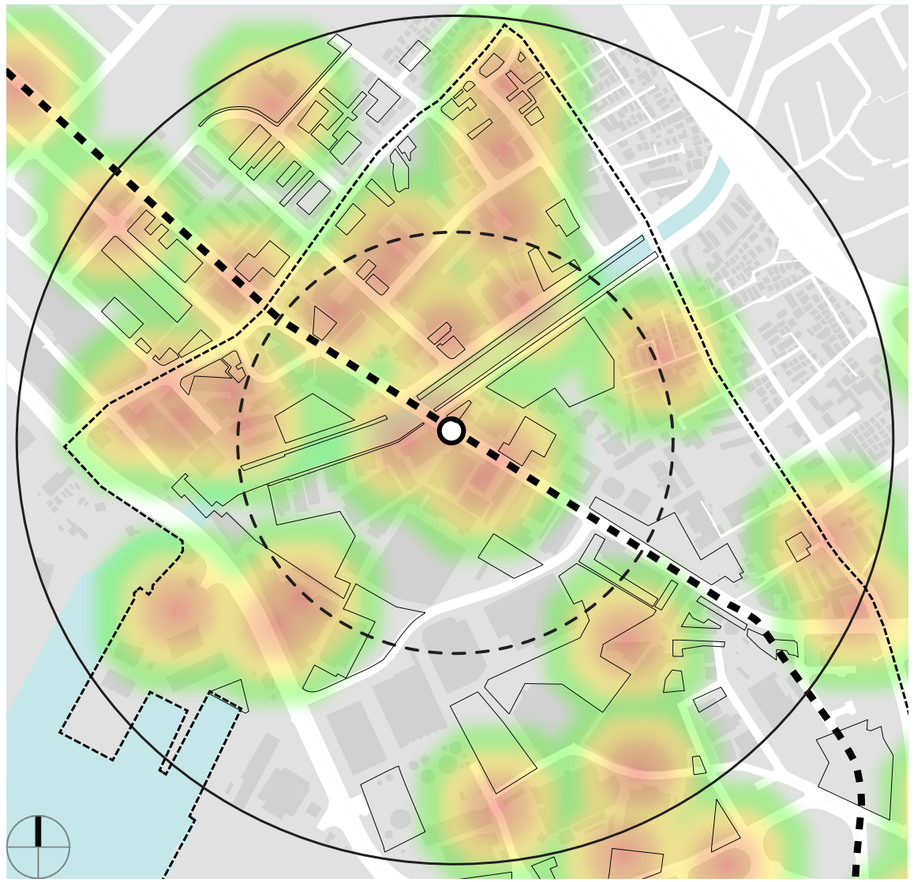

Figure 50 Kalihi-Kapālama site, heatmap of activities and recreation, zoomed to site

8.2.3 Arts and Entertainment

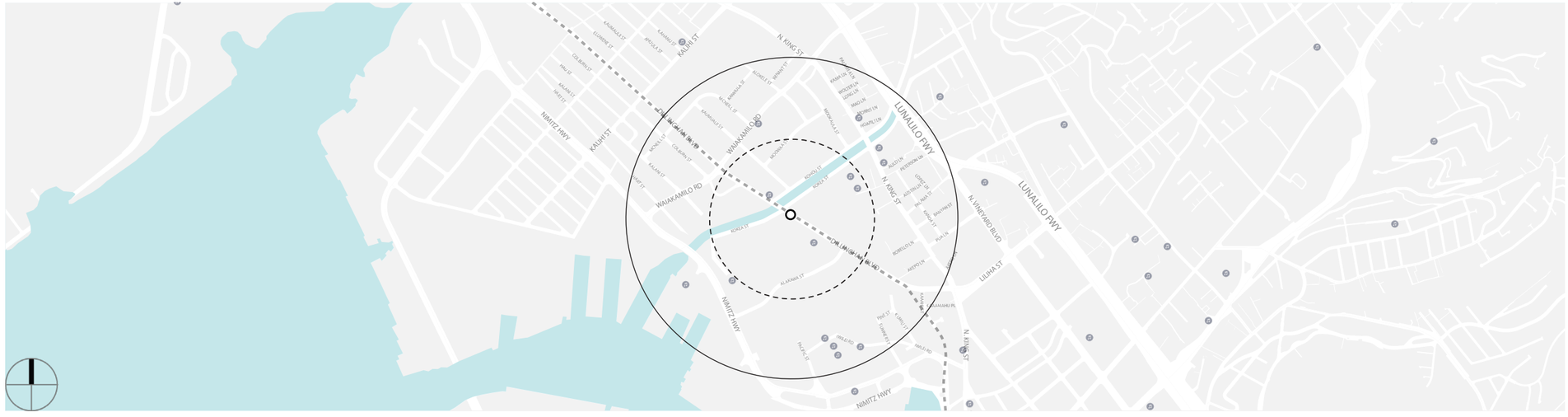

Figure 51 Kalihi-Kapālama site, map of arts and entertainment, regional

Figure 52 Kalihi-Kapālama site, heatmap of arts and entertainment, regional

Figure 53 Kalihi-Kapālama site, map of arts and entertainment, zoomed to site

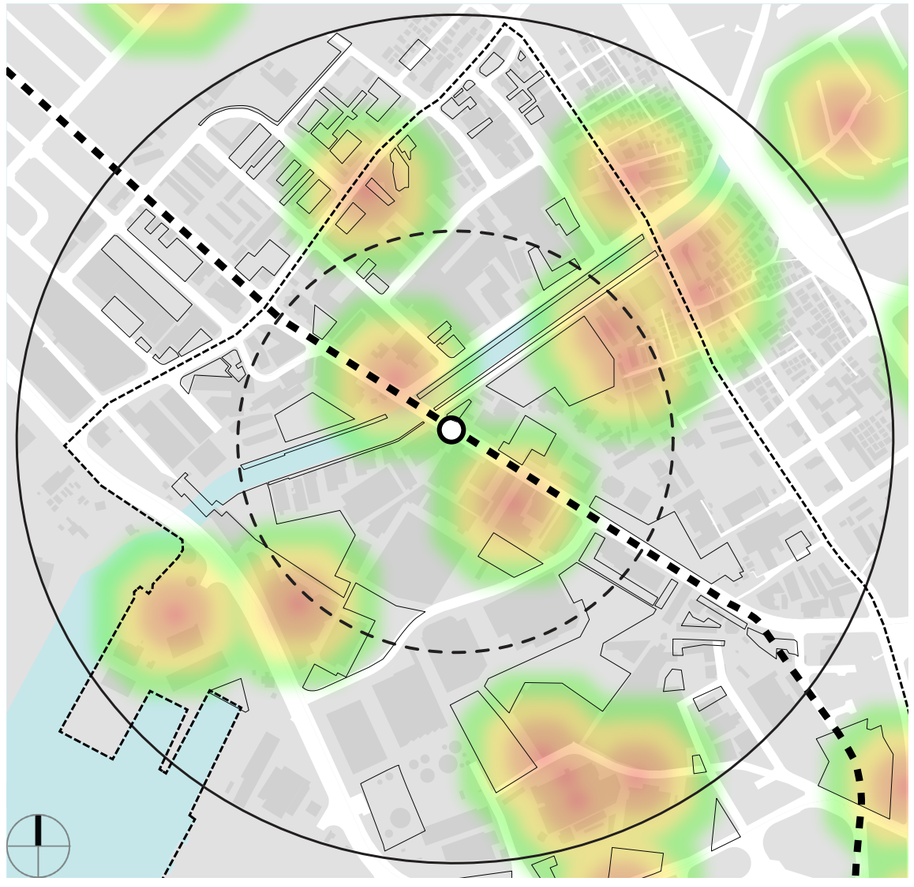

Figure 54 Kalihi-Kapālama site, heatmap of arts and entertainment, zoomed to site

8.2.4 Cafes

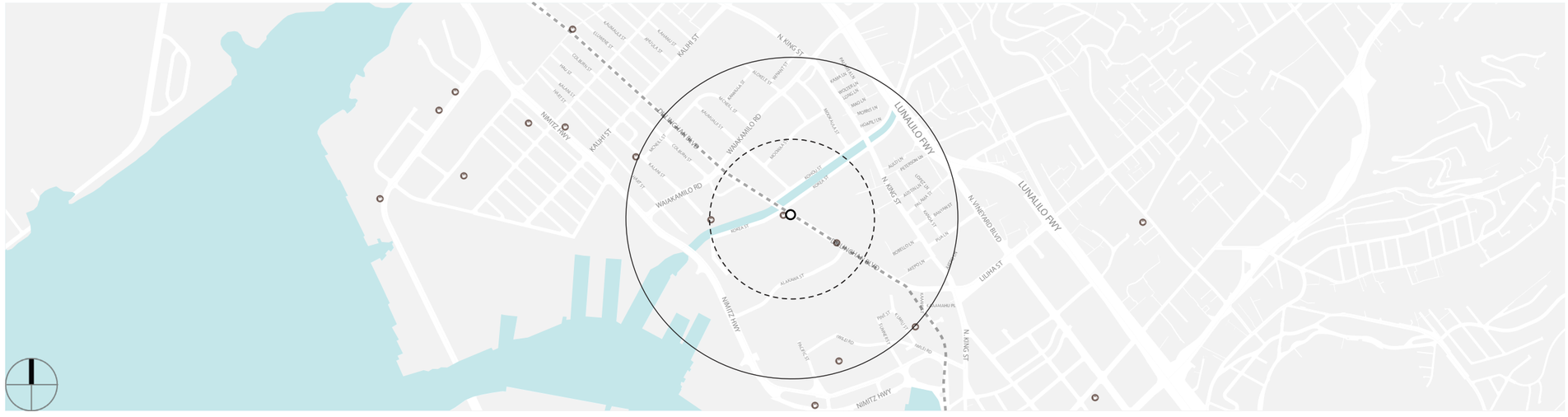

Figure 55 Kalihi-Kapālama site, map of cafes, regional

Figure 56 Kalihi-Kapālama site, heatmap of cafes, regional

Figure 57 Kalihi-Kapālama site, map of cafes, zoomed to site

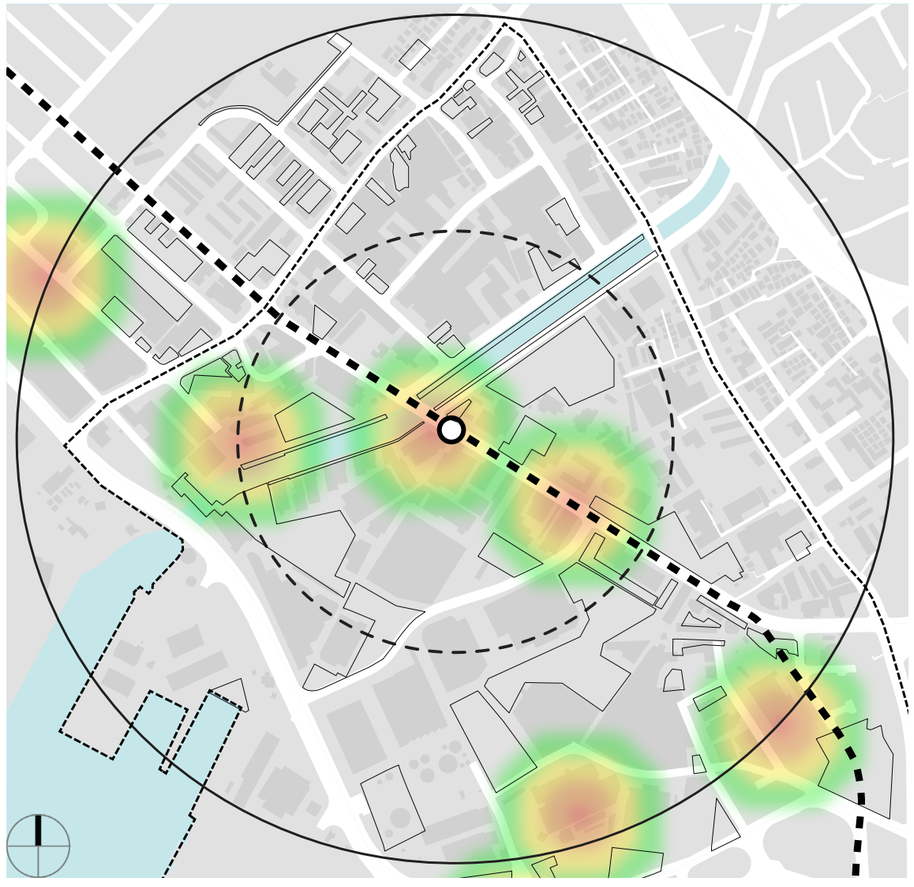

Figure 58 Kalihi-Kapālama site, heatmap of cafes, zoomed to site

8.2.5 Fresh Grocery Availability

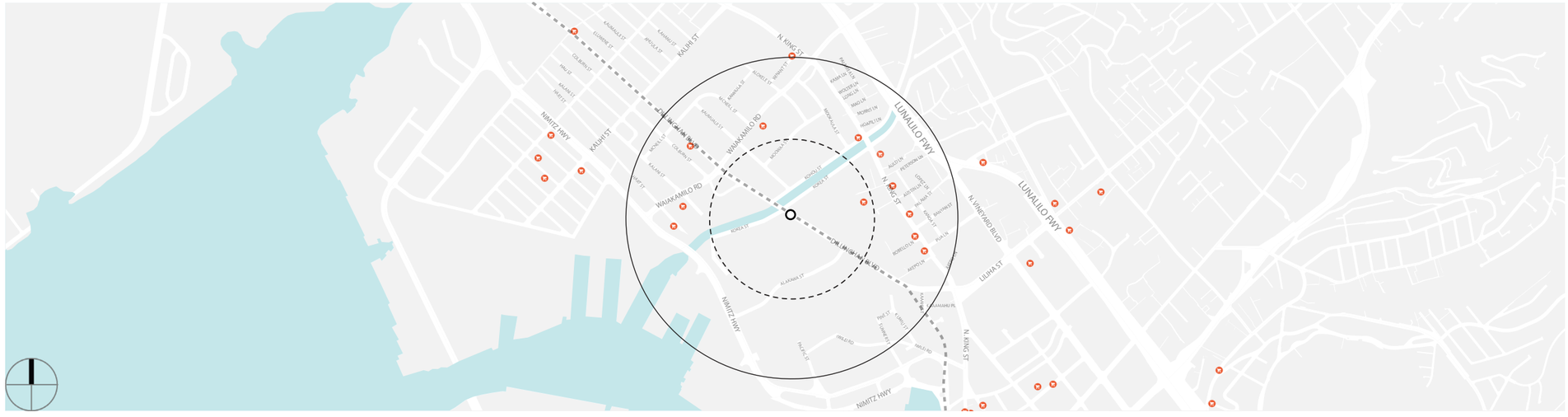

Figure 59 Kalihi-Kapālama site, map of fresh grocery availability, regional

Figure 60 Kalihi-Kapālama site, heatmap of fresh grocery availability, regional

Figure 61 Kalihi-Kapālama site, map of fresh grocery availability, zoomed to site

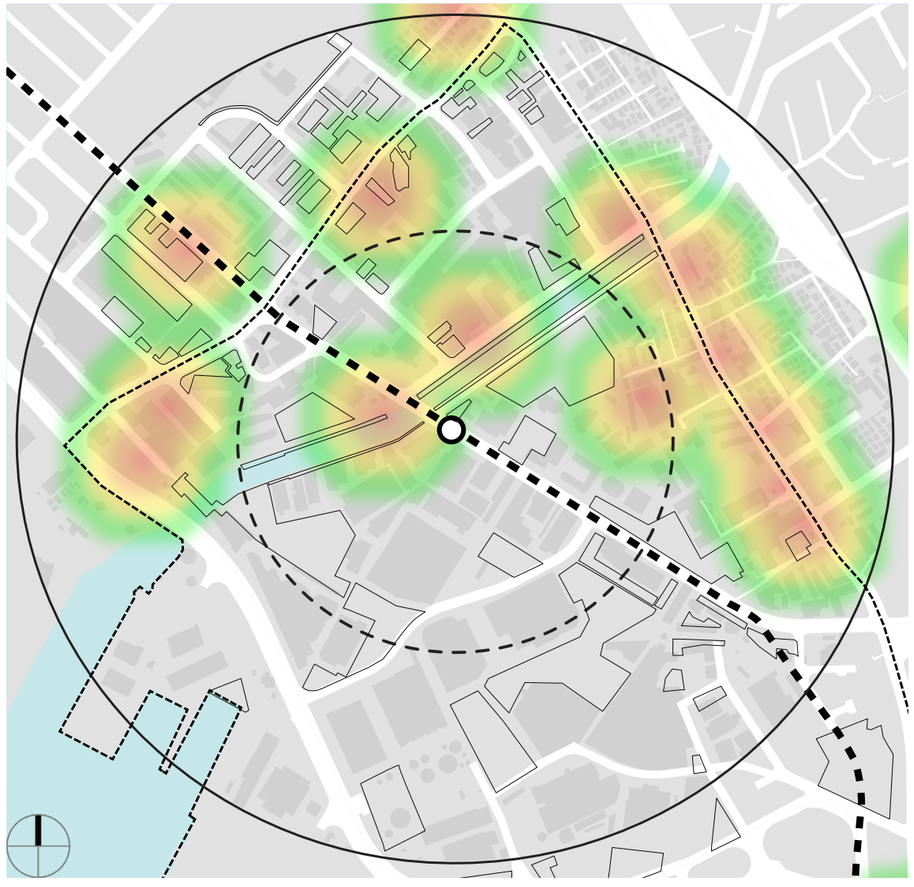

Figure 62 Kalihi-Kapālama site, heatmap of fresh grocery availability, zoomed to site

8.2.6 Restaurants

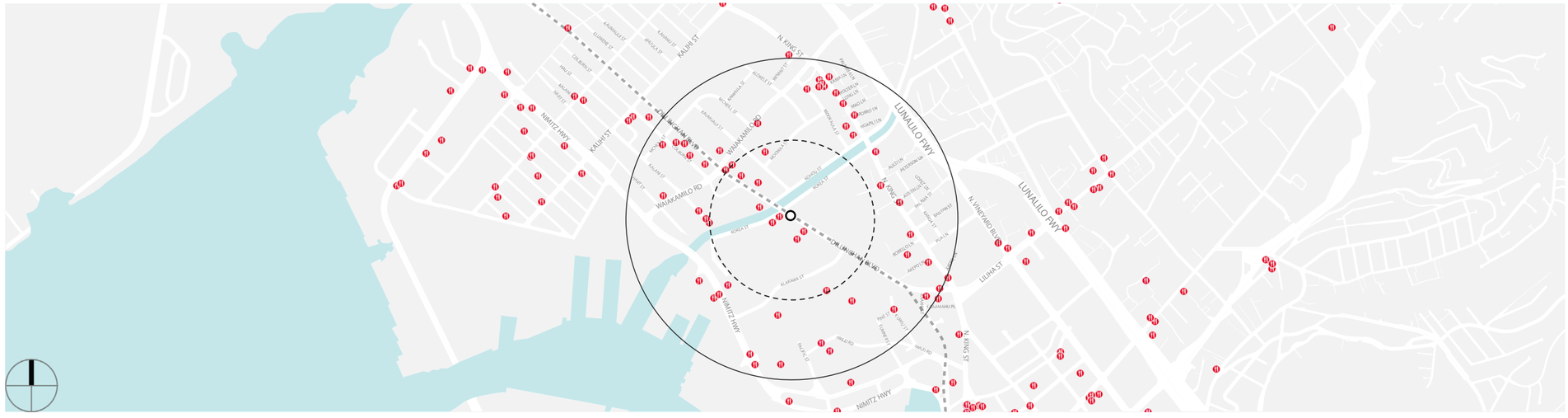

Figure 63 Kalihi-Kapālama site, map of restaurants, regional

Figure 64 Kalihi-Kapālama site, heatmap of restaurants, regional

Figure 65 Kalihi-Kapālama site, map of restaurants, zoomed to site

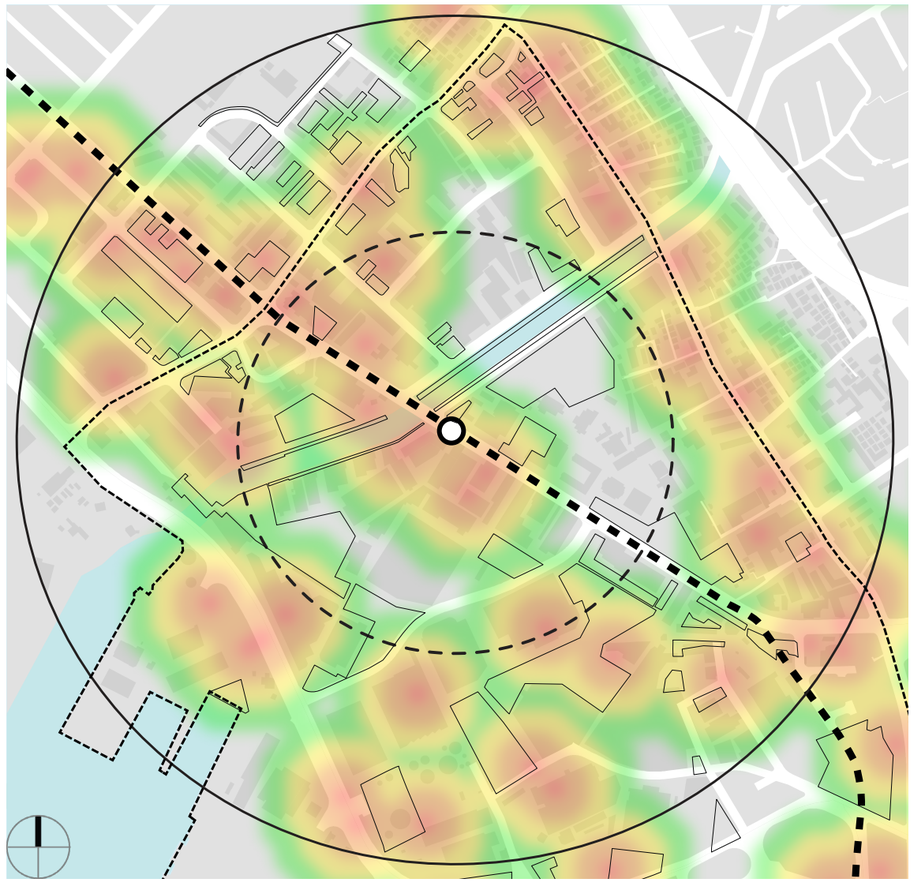

Figure 66 Kalihi-Kapālama site, heatmap of restaurants, zoomed to site

8.2.6 Restaurants

Figure 67 Kalihi-Kapālama site, map of nightlife, regional

Figure 68 Kalihi-Kapālama site, heatmap of nightlife, regional

Figure 69 Kalihi-Kapālama site, map of nightlife, zoomed to site

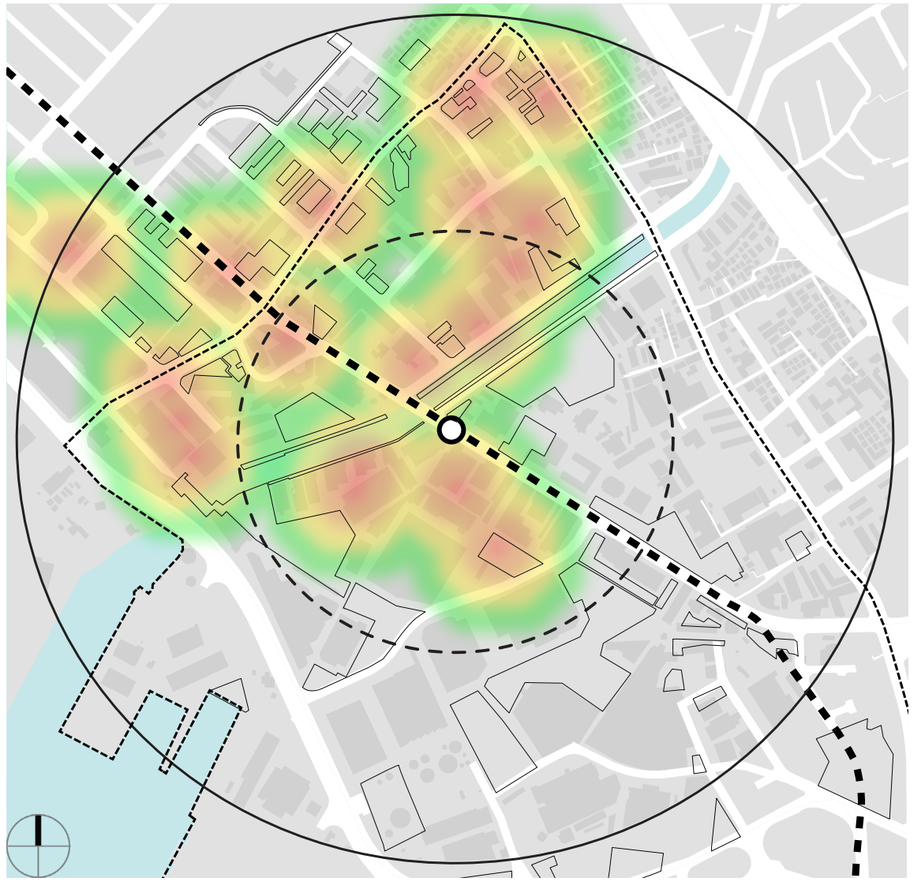

Figure 70 Kalihi-Kapālama site, heatmap of nightlife, zoomed to site

8.2.8 Relaxation

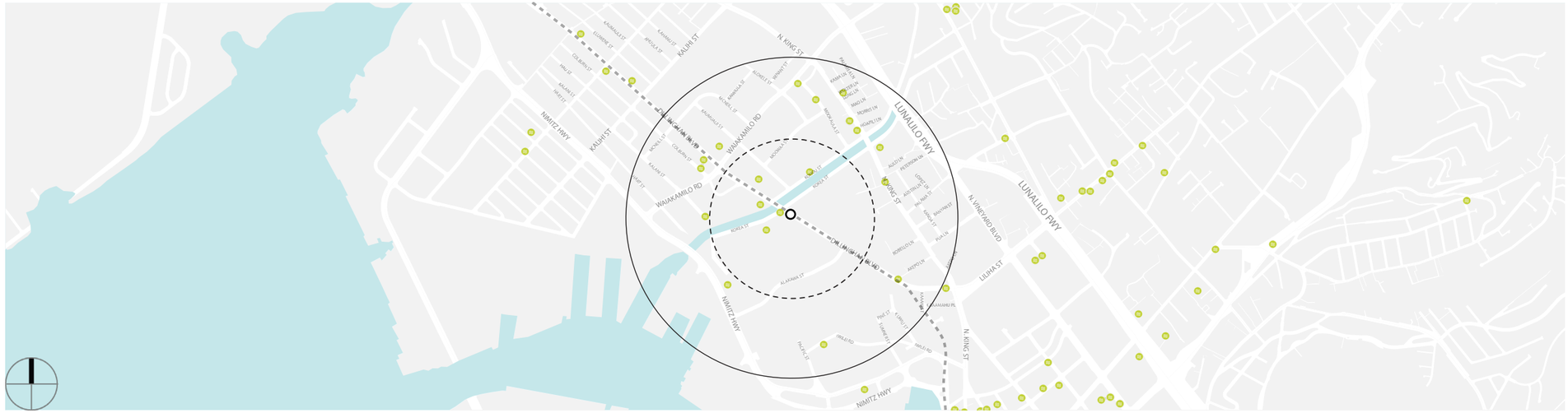

Figure 71 Kalihi-Kapālama site, map of relaxation, regional

Figure 72 Kalihi-Kapālama site, heatmap of relaxation, regional

Figure 73 Kalihi-Kapālama site, map of relaxation, zoomed to site

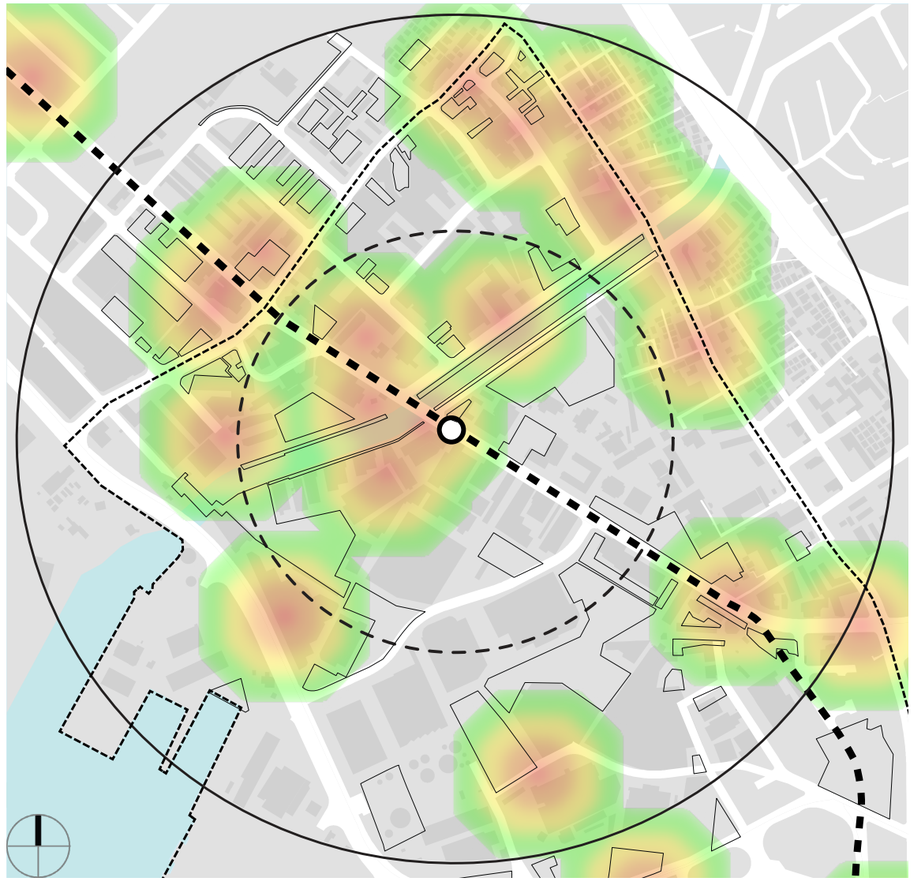

Figure 74 Kalihi-Kapālama site, heatmap of relaxation, zoomed to site

8.2.9 Shopping and Retail

Figure 75 Kalihi-Kapālama site, map of shopping and retail, regional

Figure 76 Kalihi-Kapālama site, heatmap of shopping and retail, regional

Figure 77 Kalihi-Kapālama site, map of shopping and retail, zoomed to site

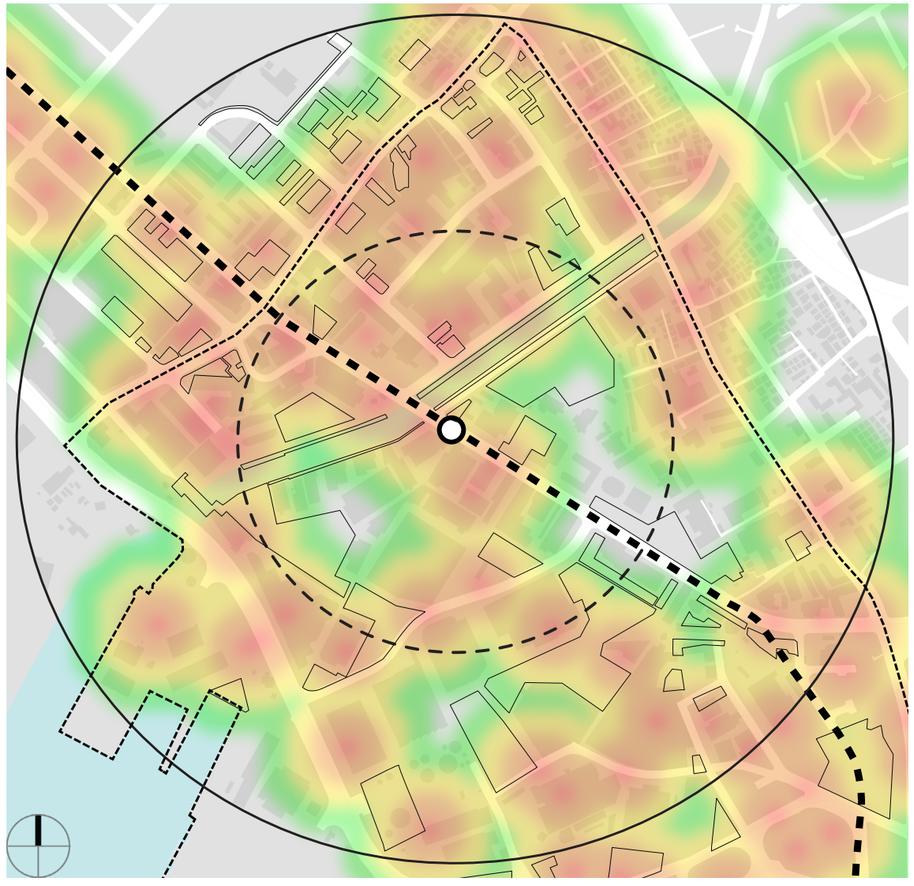

Figure 78 Kalihi-Kapālama site, heatmap of shopping and retail, zoomed to site

8.3 Potential Sites for Kalihi-Kapālama Site

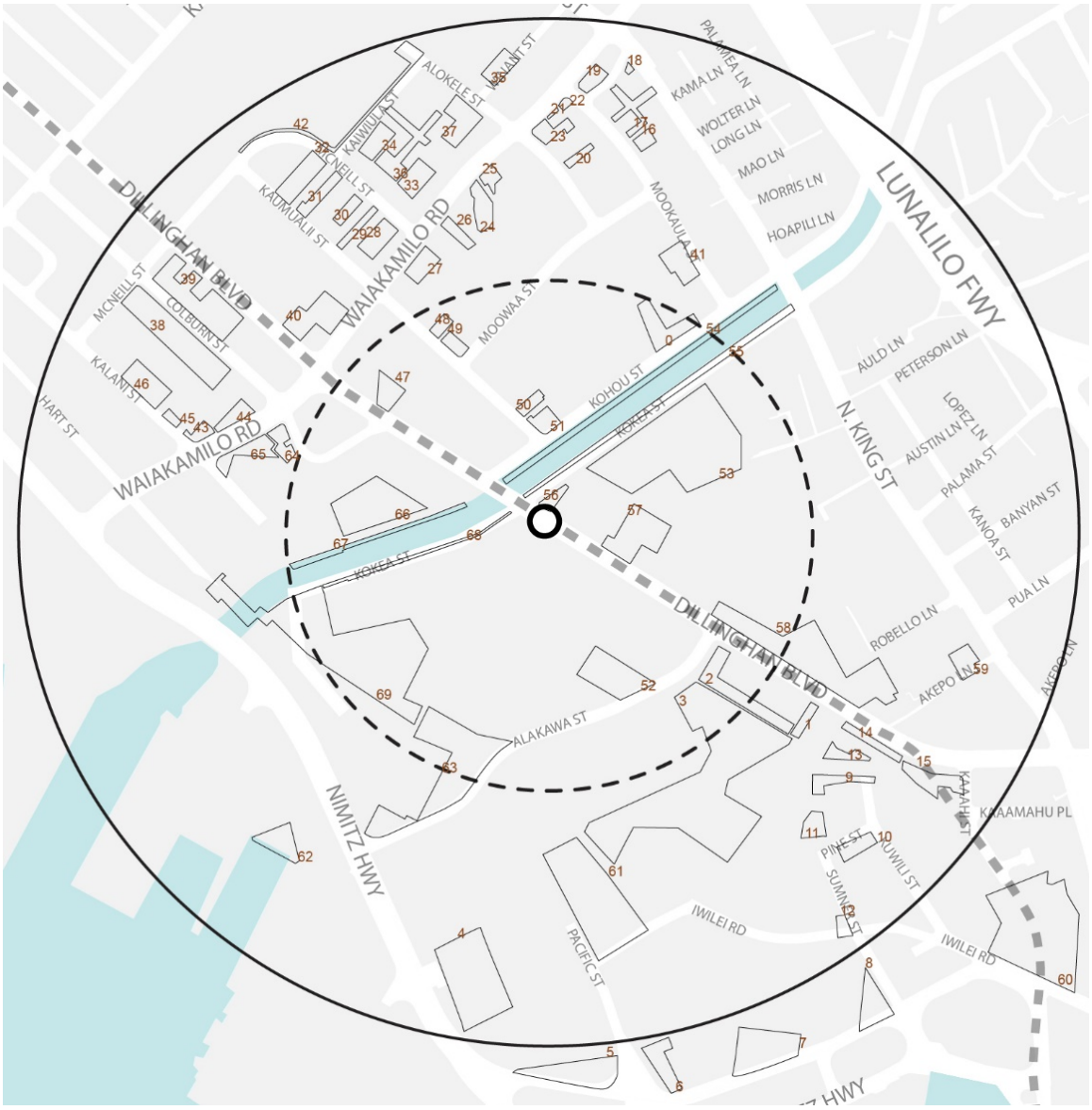

Figure 79 Kalihi-Palama Potential Sites

The potential sites mapped in the figure above are a collection of parcels that have been collected based on the definition of “interstitial” that was stated in the first chapter. Sites were chosen due to its features on-site. The chosen sites were located on parcels that were underutilized, used mainly as surface parking or storage for abandoned machinery, sites that were not used, which includes areas that hold rail transit infrastructure, and open land accessible to the public.

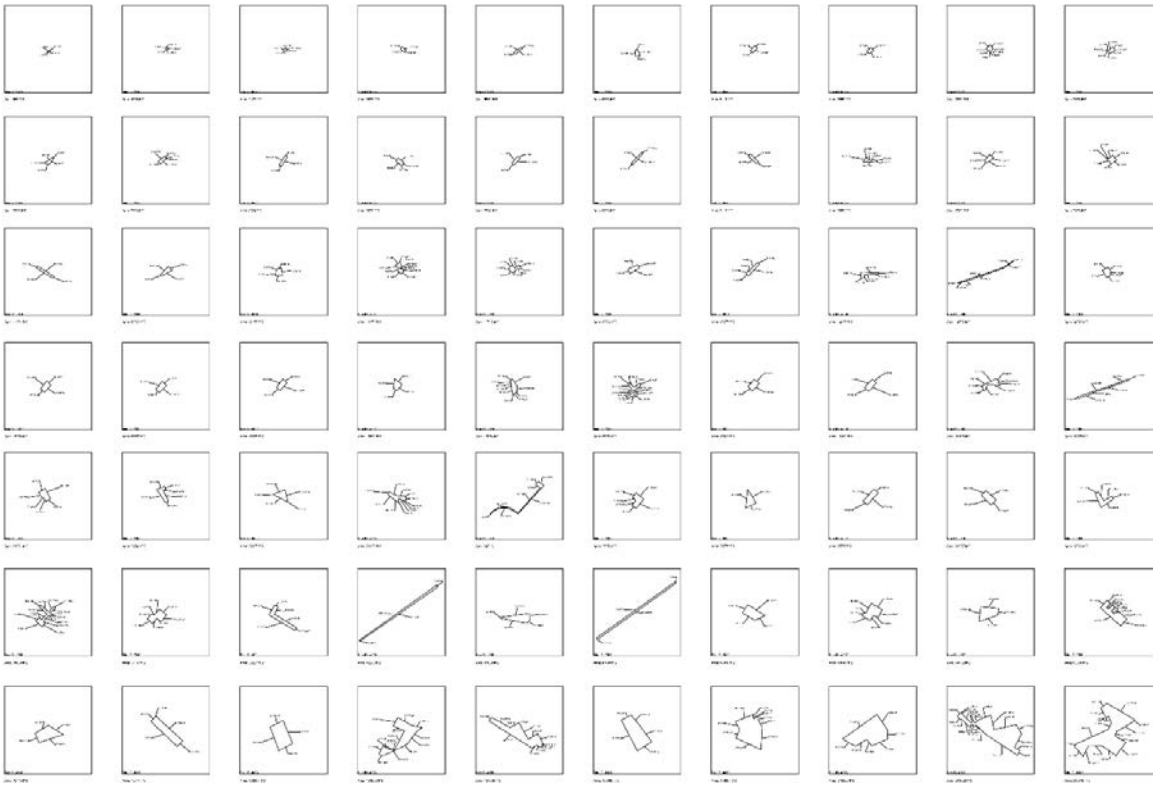

Figure 80 Shape catalogue of Kalihi-Kapālama sites

8.3.1 Sites Most Viable for Kalihi-Kapālama Site

As a result of the heatmaps and demographics, the resource that is most lacking is fresh produce. The function that would be most viable in this area would be some type vendor that provided fresh food products such as a farmer's market type of stall or a stand-alone kiosk. Although a number a fresh grocery locations are marked in the provided map, a number of business have restrictions to the access of their products. As a result, locations operating as wholesalers and locations requiring membership were not considered. Gourmet and specialty stores were also not considered due to limited selection or no food items. Locations dealing in primarily prepared meals were also not considered.

8.3.2 Matching: Potential Sites + Function for Kalihi-Kapālama

In order to locate sites that would function best with a grocery function and were relatively easy to acquire, filtering was needed. Sites that were privately owned were removed. Second, lots that were located in high traffic areas located within residential areas were removed. Lastly, lots that were in close proximity and direct conflict with similar grocery locations were removed.

8.4 Kaheka-Keeaumoku Site

Kaheka-Keeaumoku site offers a range of attractions that serve both locals and tourists as it is a major economic and entertainment draw. The area is highly dense for this major reason, with the Kaheka-Keeaumoku site being the densest in terms of residential and population density. With the demographics of the area and its close proximity to Ala Moana, the site analysis for the area reveals a large disparity between the population of lower income with the more wealthy. As development continues in the area, business and services will begin to cater more towards those of the higher income bracket, leaving the rest with a lack of access.

The site itself possesses a few major arterial roadways that bisect the site focus area. On the downside, a number of properties are older and underdeveloped, lacking much character.

In addition, these properties do not support the future transit oriented development plans the city has planned. As a result, there are areas that have major potential for revitalization in hopes to redevelop the lower intensity properties that adds to the sense of identity the area really needs.

8.5 Resource Mapping for Kaheka-Keeaumoku Site

8.5.1 Care and Essentials

Figure 81 Kaheka-Keeaumoku site, map of care and essentials, regional

8.5 Resource Mapping for Kaheka-Keeaumoku Site

8.5.1 Care and Essentials

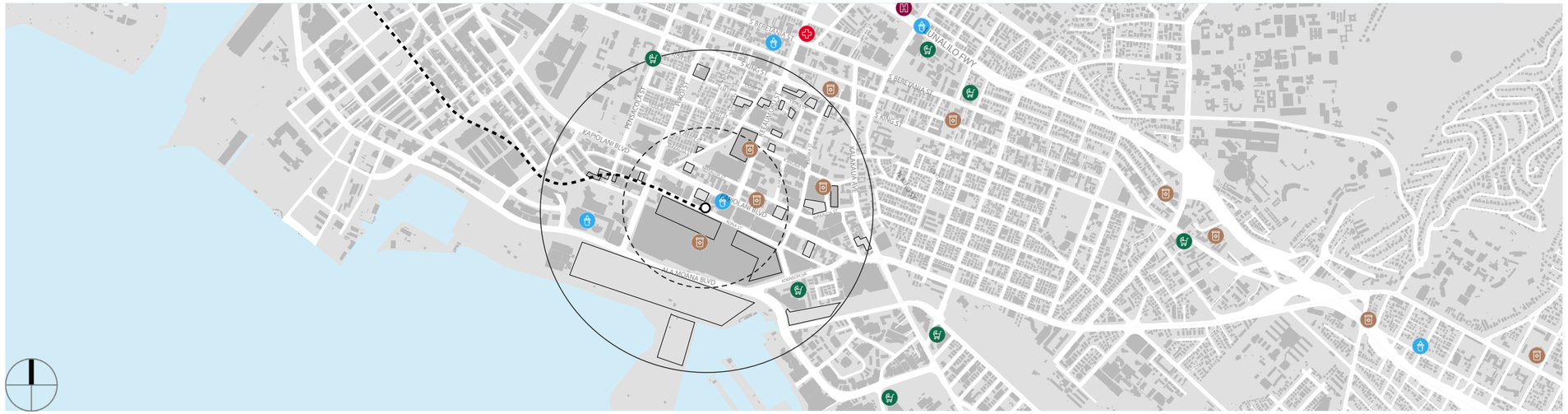

Figure 81 Kaheka-Keeaumoku site, map of care and essentials, regional

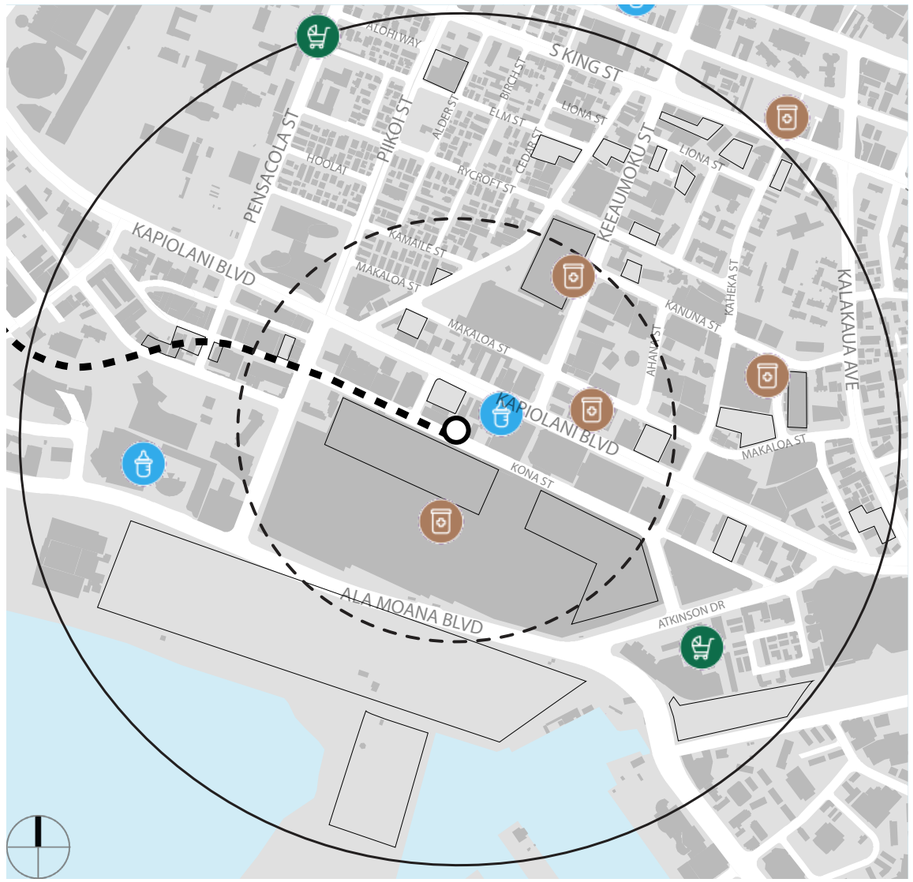

Figure 82 Kaheka-Keeaumoku site, heatmap of care and essentials, regional

8.5.2 Activities and Recreation

Figure 83 Kaheka-Keeaumoku site, map of activities and recreation, regional

Figure 84 Kaheka-Keeaumoku site, heatmap of activities and recreation, regional

Figure 85 Kaheka-Keeaumoku site, map of activities and recreation, zoomed to site

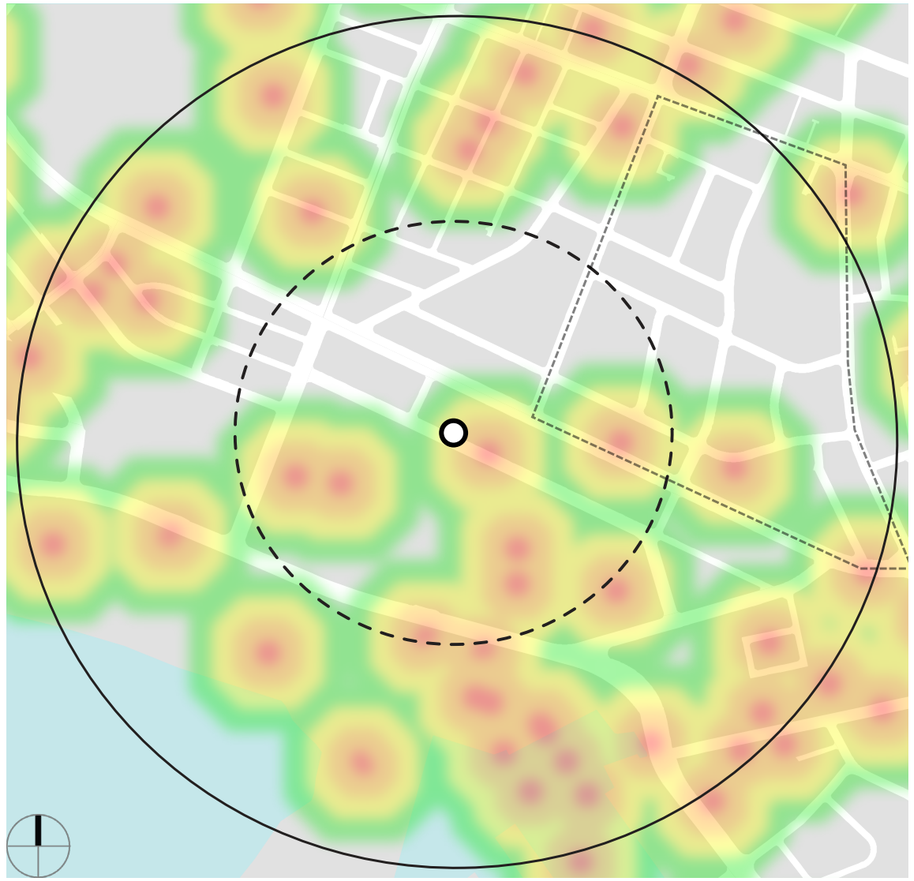

Figure 86 Kaheka-Keeaumoku site, heatmap of activities and recreation, zoomed to site

8.5.3 Arts and Entertainment

Figure 87 Kaheka-Keeaumoku site, map of arts and entertainment, regional

Figure 88 Kaheka-Keeaumoku site, heatmap of arts and entertainment, regional

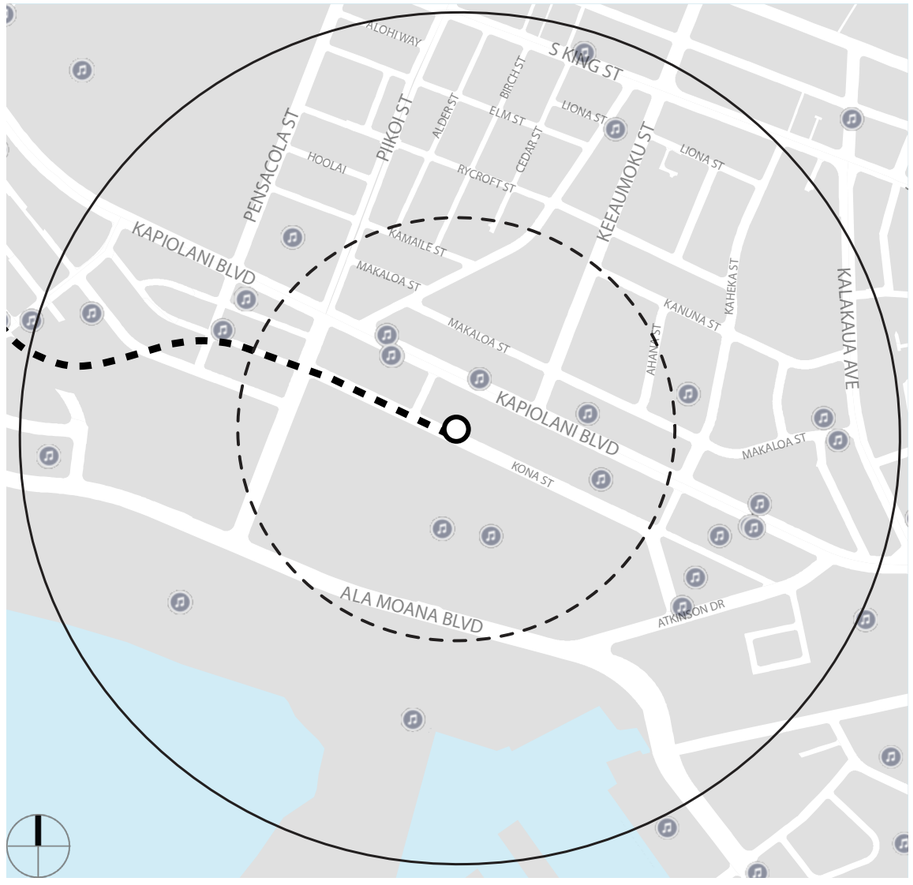

Figure 89 Kaheka-Keeaumoku site, map of arts and entertainment, zoomed to site

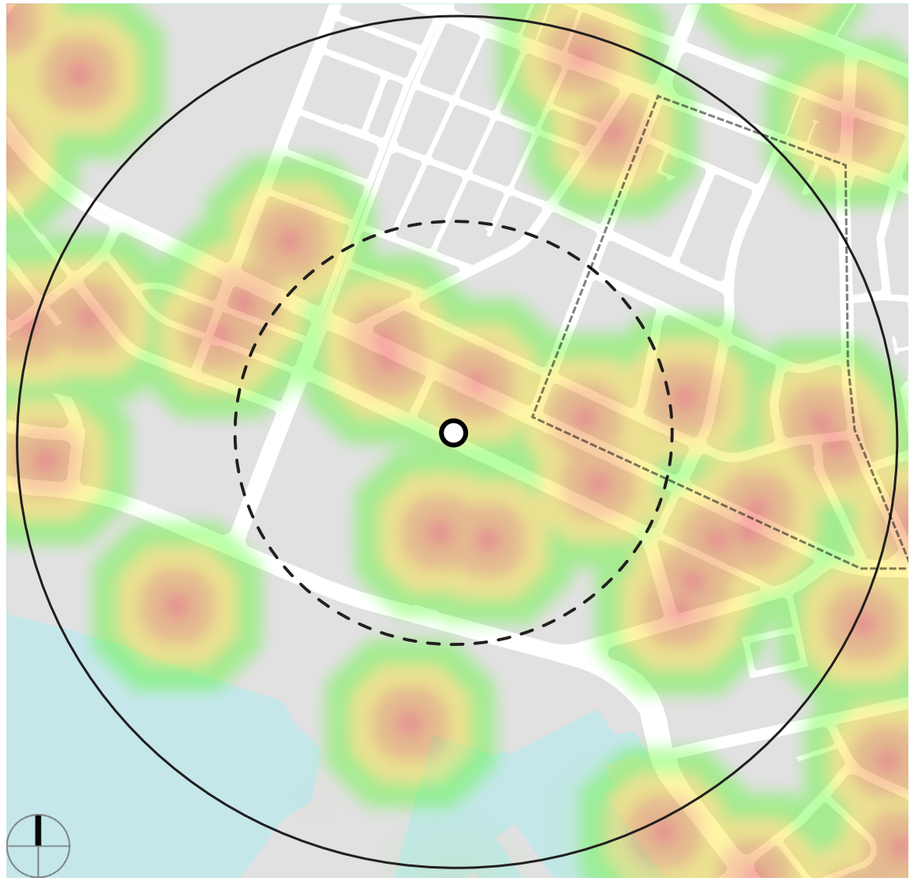

Figure 90 Kaheka-Keeaumoku site, heatmap of arts and entertainment, zoomed to site

8.5.4 Cafes

Figure 91 Kaheka-Keeaumoku site, map of cafes, regional

Figure 92 Kaheka-Keeaumoku site, heatmap of cafes, regional

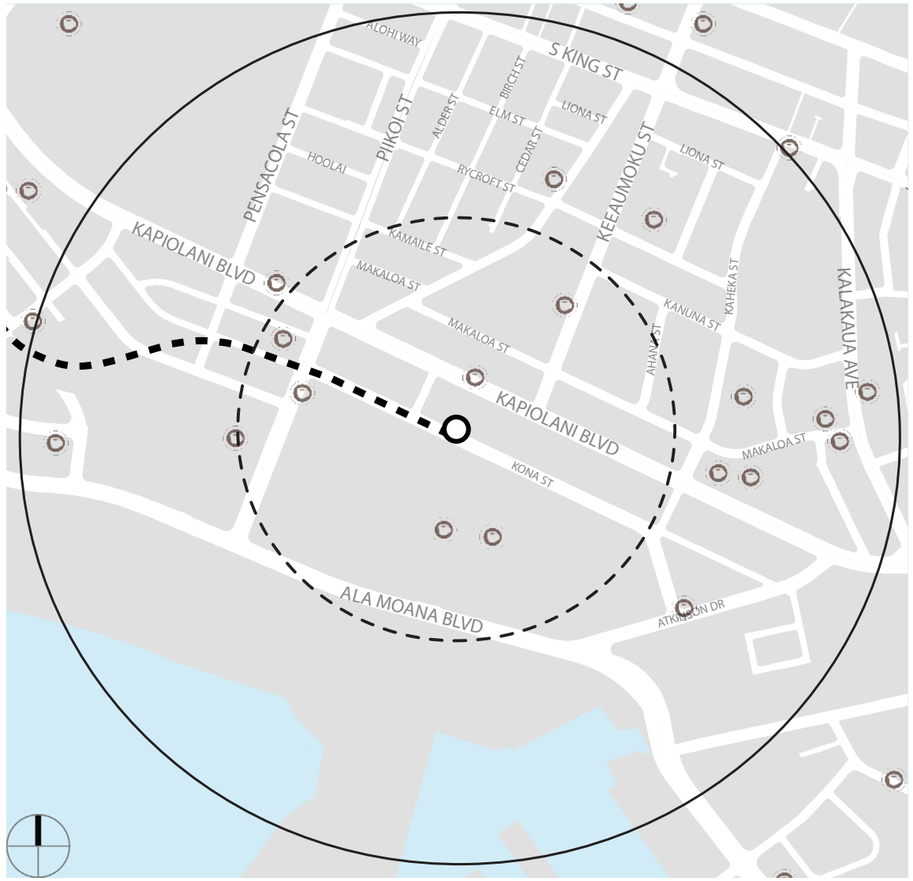

Figure 93 Kaheka-Keeaumoku site, map of cafes, zoomed to site

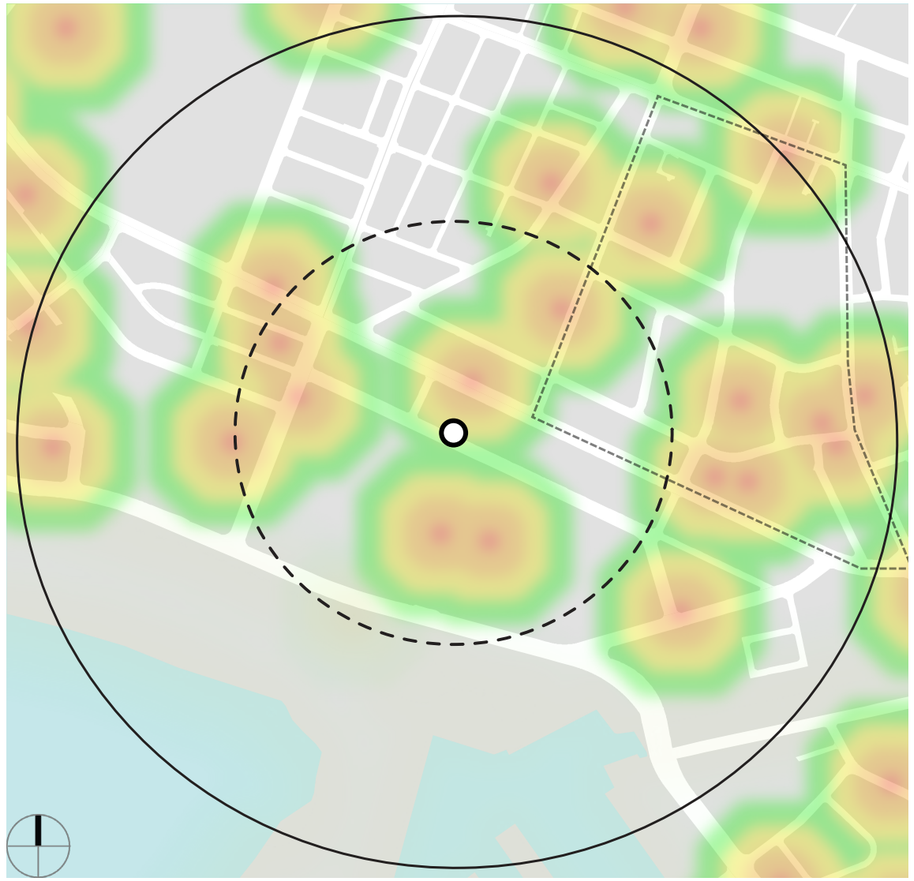

Figure 94 Kaheka-Keeaumoku site, heatmap of cafes, zoomed to site

8.5.5 Fresh Grocery Availability

Figure 95 Kaheka-Keeaumoku site, map of fresh grocery availability, regional

Figure 96 Kaheka-Keeaumoku site, heatmap of fresh grocery availability, regional

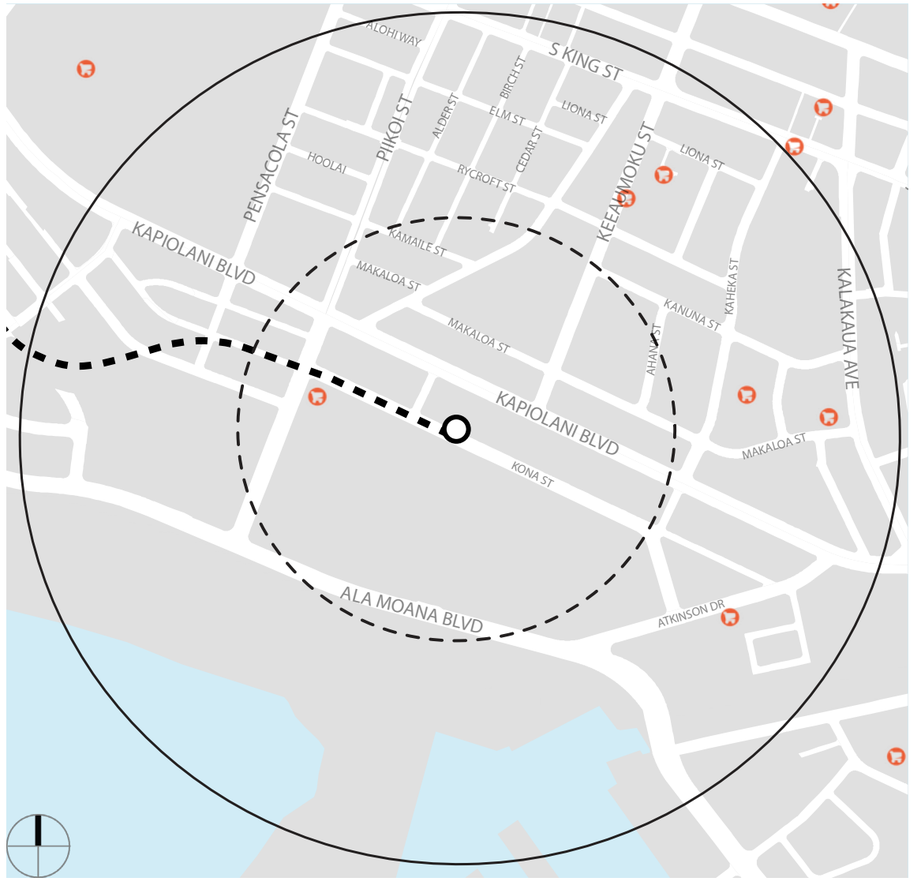

Figure 97 Kaheka-Keeaumoku site, map of fresh grocery availability, zoomed to site

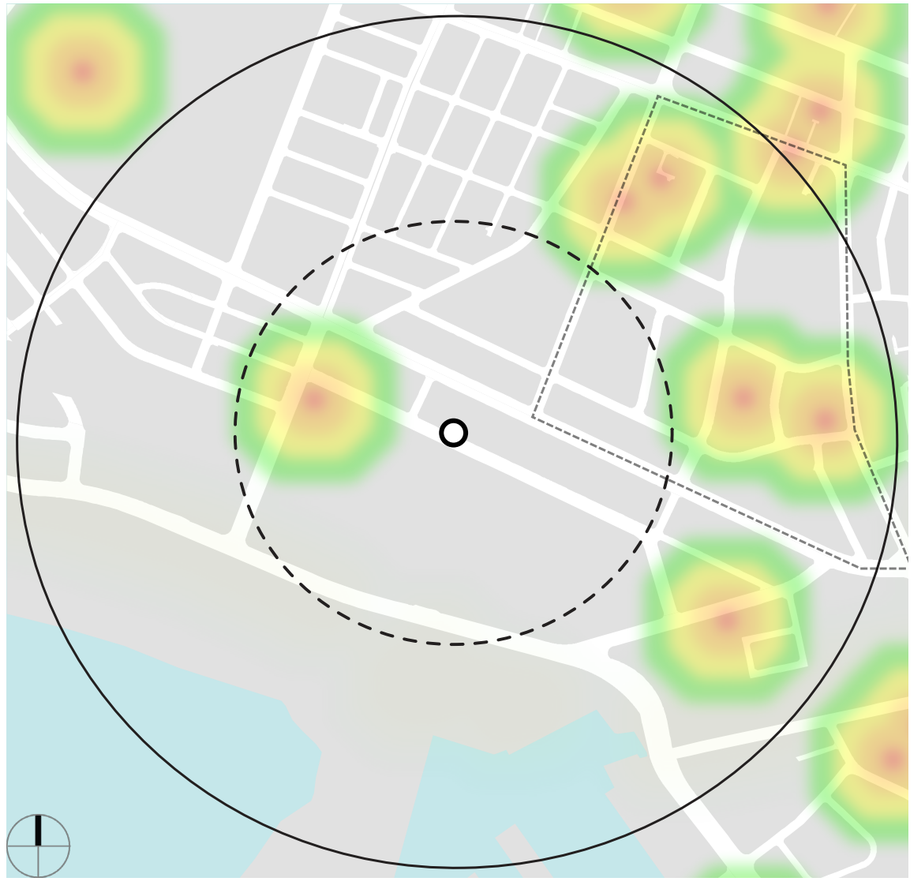

Figure 98 Kaheka-Keeaumoku site, heatmap of fresh grocery availability, zoomed to site

8.5.6 Restaurants

Figure 99 Kaheka-Keeaumoku site, map of restaurants, regional

Figure 100 Kaheka-Keeaumoku site, heatmap of restaurants, regional

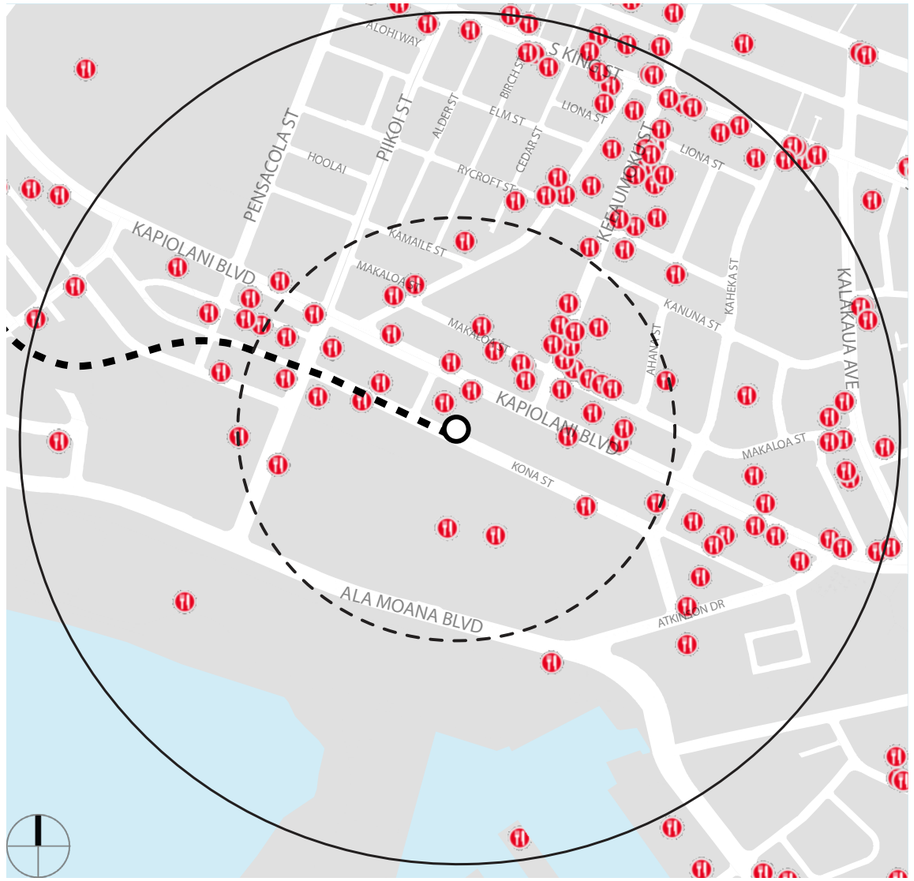

Figure 101 Kaheka-Keeaumoku site, map of restaurants, zoomed to site

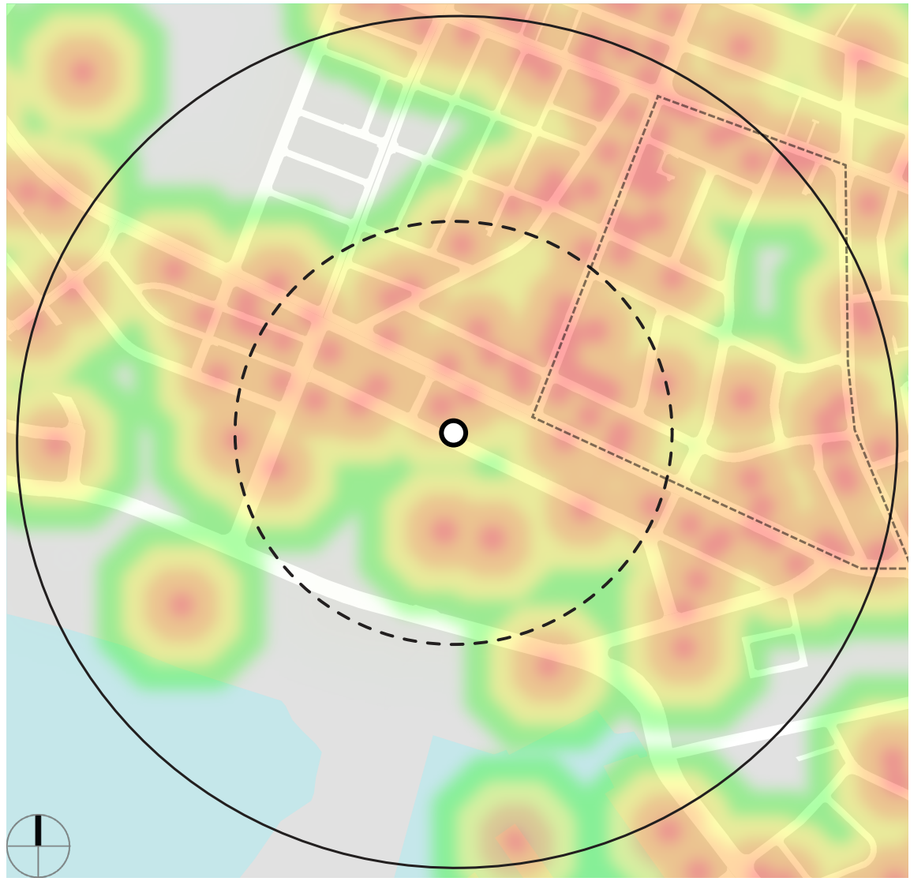

Figure 102 Kaheka-Keeaumoku site, heatmap of restaurants, zoomed to site

8.5.7 Nightlife

Figure 103 Kaheka-Keeaumoku site, map of nightlife, regional

Figure 104 Kaheka-Keeaumoku site, heatmap of nightlife, regional

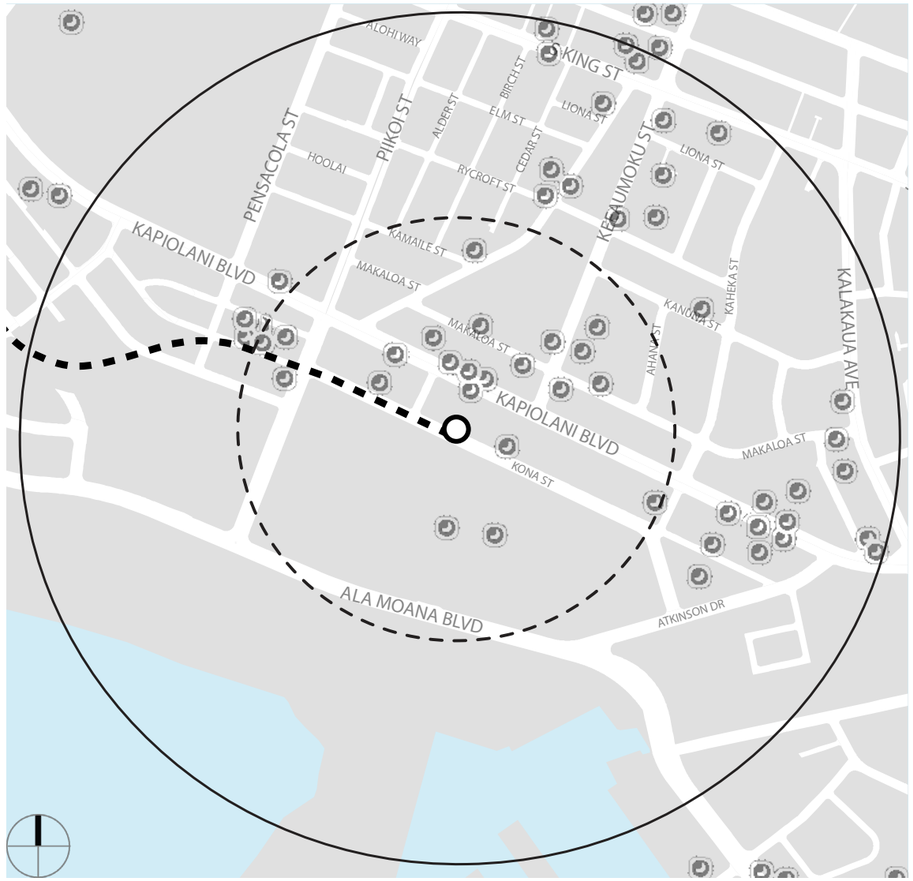

Figure 105 Kaheka-Keeaumoku site, map of nightlife, zoomed to site

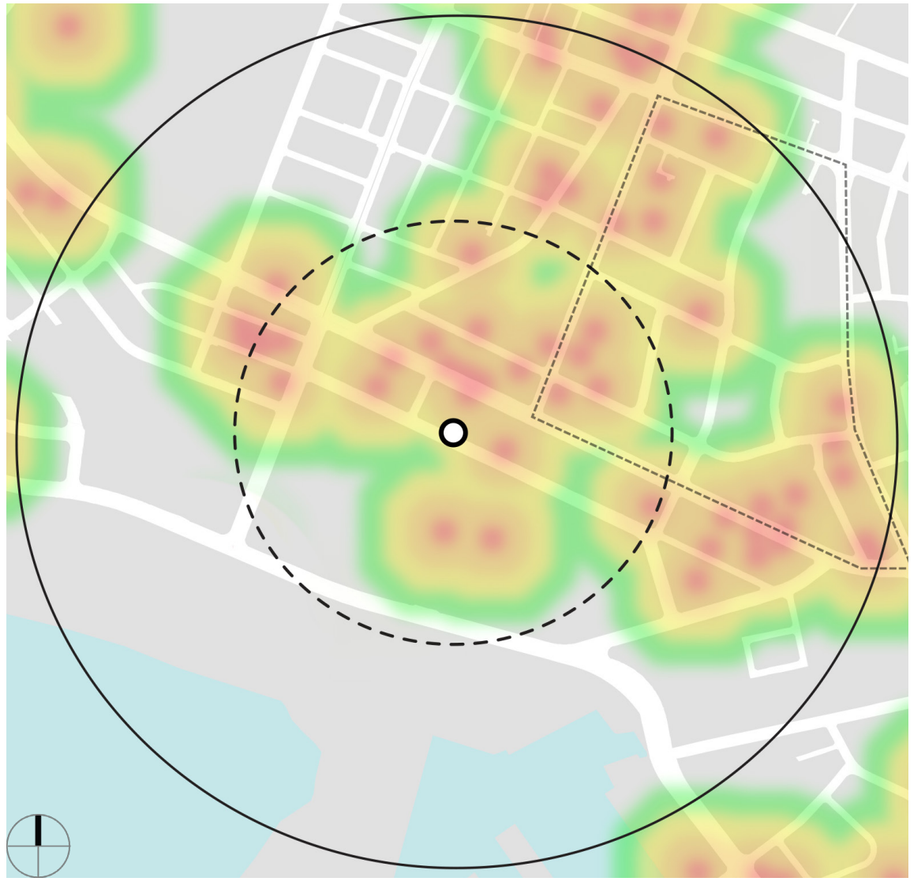

Figure 106 Kaheka-Keeaumoku site, heatmap of nightlife, zoomed to site

8.5.8 Relaxation

Figure 107 Kaheka-Keeaumoku site, map of relaxation, regional

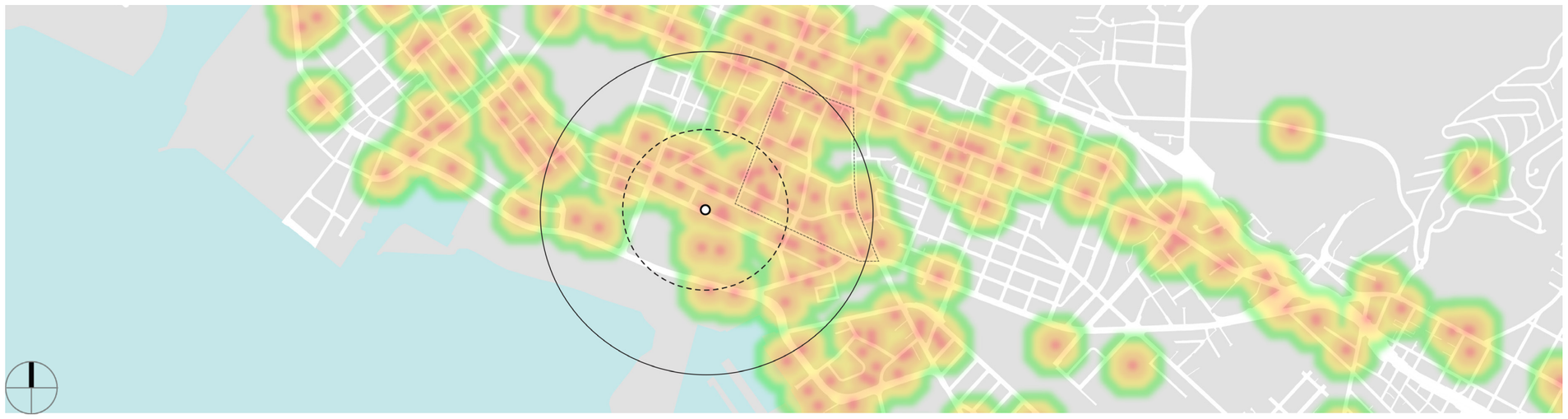

Figure 108 Kaheka-Keeaumoku site, heatmap of relaxation, regional

Figure 109 Kaheka-Keeaumoku site, map of relaxation, zoomed to site

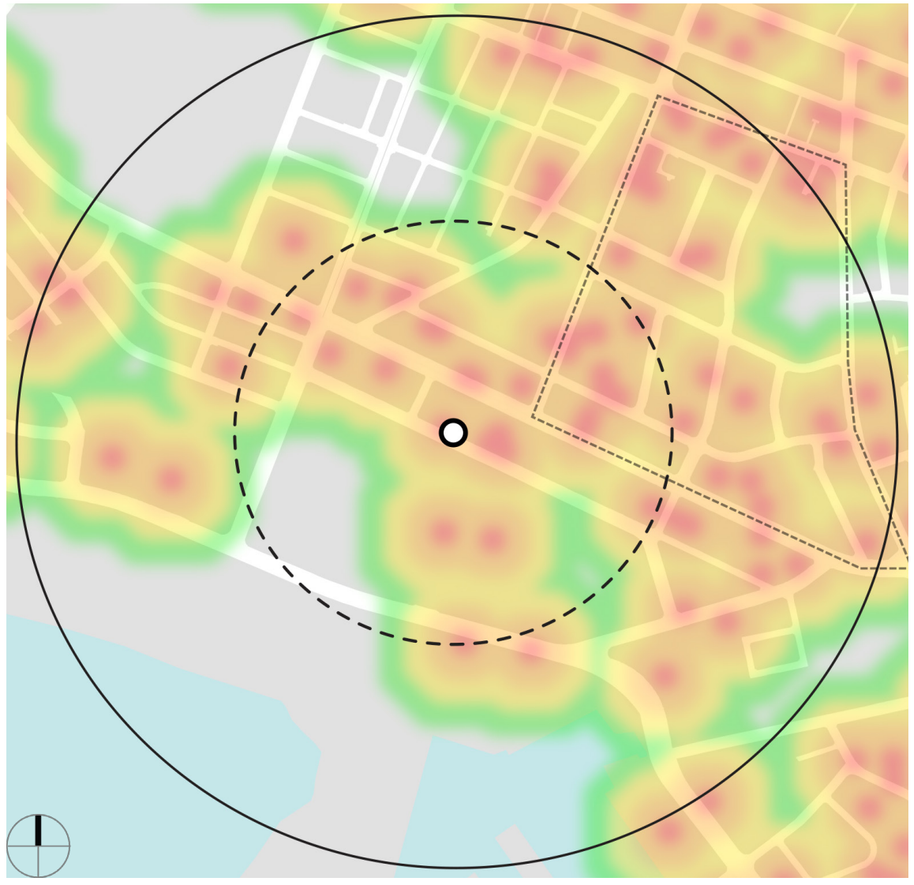

Figure 110 Kaheka-Keeaumoku site, heatmap of relaxation, zoomed to site

8.5.9 Shopping and Retail

Figure 111 Kaheka-Keeaumoku site, map of shopping and retail, regional

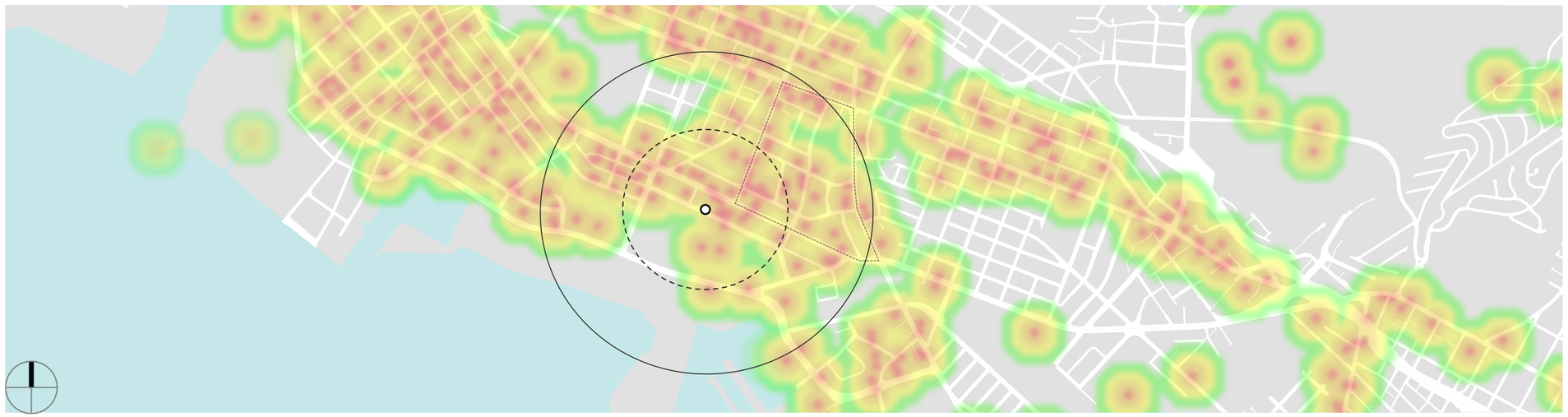

Figure 112 Kaheka-Keeaumoku site, heatmap of shopping and retail, regional

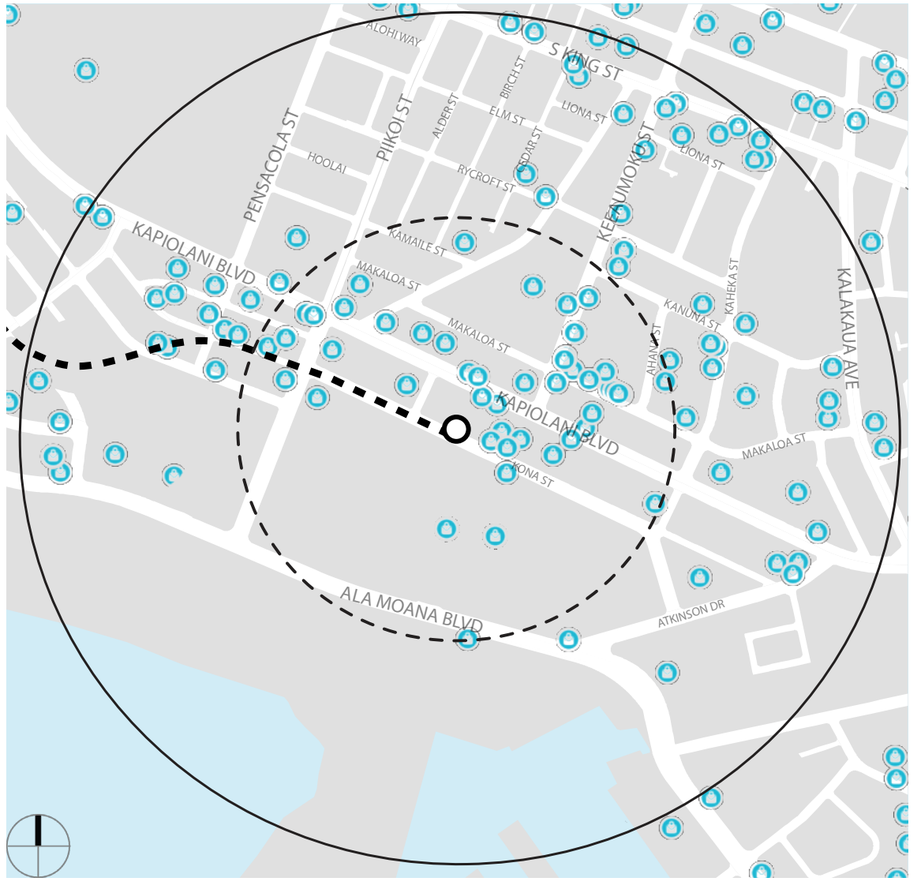

Figure 113 Kaheka-Keeaumoku site, map of shopping and retail, zoomed to site

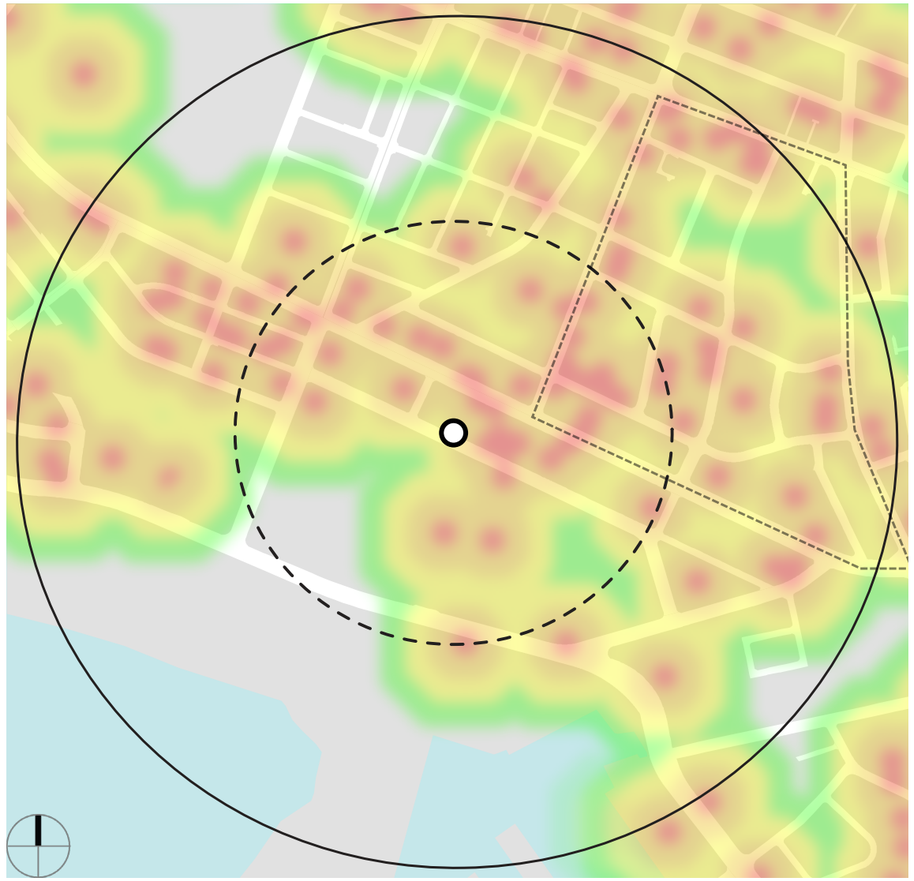

Figure 114 Kaheka-Keeaumoku site, heatmap of shopping and retail, zoomed to site

8.6 Potential Sites for Kaheka-Keeaumoku Site

Figure 115 Map of Kaheka-Keeaumoku site, regional

Using the same method as the Kapālama site, potential lots were chosen based on the same criteria.

8.6.1 Most Viable/Best Potential Function:

Based on the resource maps and demographics, what is most needed in the area is access to services, especially with the large number of homeless population in the area. These services primarily should focus on functions on health and basic necessities such as restrooms, health clinics and laundromats. In the care and essentials map for the Kaheka-Keeaumoku Site, a greater number of resources are shown, but many of these resources do not provide the aforementioned services as they are primarily pharmacies.

8.6.2 Matching: Potential Sites + Function for Kalihi-Kapālama

A similar method as done with the Kapālama site, was applied to the Kaheka-Keeaumoku site. Because this area is much more dense, land acquisition had become an issue. As a result, the filtering of private landowners was not done to this collection of sites.

9 Design Strategies

9.1 Design Considerations

For the design of a structure that is adaptable to the interstitial space it resides, an understanding of geometric conditions and the connection between elements is necessary. This chapter is about the design decisions prior project and their effect on the final design result.

The aim of the design project lists as follows:

- easy of execution and deployment
- reusability of modules
- cost reduction due to prefabrication
- expansion and transportability
- repair and maintenance
- beauty and aesthetic
- Functionality and adaptability to program

The chosen criteria is derived from the function and size of the structure, design context, type of use, expected life cycle, cost and sustainability. The important aspects of this project was to establish a balance between requirements and constraints such as available resources, financial issues, structural and operational concerns and maintenance issues.

One of the main characteristics that this project tries to focus on is the flexibility of the structure to transform itself to efficiently cater to the needed function of the current site. The flexibility comes from the space generated by the deployable structure, material characteristics and interior installations. The expansion of the structure by the use of multiple modules need to work with the connections between these models, making the joints and the related movable components one of the most important pieces of the structure itself. In current iterations of temporary structures, the majority of projects use deformable materials as a skin attached to a structural frame to bypass these difficulties of working with movable connections.

The degree of compactness in the unused configuration for transporting is also important. The fully expanded module is full of empty space. Based on actions such as bending, folding, or other movements, larger structures can be transported by smaller vehicles without the need for special permits or permission as is needed for larger more rigid units. In order to take advantage of this ease of transportation, it is

important for the structure to efficiently minimize the size of the structure in the unused configuration that does not take away from its functionality for its chosen program. Transport options need to consider the project necessities: the number of modules to be moved; the distance; the number of sites to be deployed; funding and security.

With temporary structures, especially ones that are modular, spatial layout is something that needs to be considered. For a “single versus many” type of layout, the number of modules or the number vendors affects the spatial layout. Depending on the function, a program can contain multiple separate buildings or a single larger building. The advantage of separated modules is that it creates a more intimate scale and wandering navigation style, but with less clear organization. With a unified single building, there is a much clearer organization. If it is linear, there will units closer to main spaces and some further away, creating inequality amongst module.

Circulation pattern also needs to be considered when it comes to spatial layouts. If the circulation pattern is rigid and orthogonal, there is easier navigation, but less natural to wander. It also increases the efficiency and accessibility to certain modules, if a number of different types exist. An organic circulation pattern will promote exploration on the site and makes it feel more natural for the module to exist and belong there. A continuous circulation pattern, one that is circular and turns in on itself, will create equal opportunity for exposure for all modules and emphasizes on the public spaces between each module. Intersecting circulation patterns have a clear hierarchy and are less efficient in terms of navigation but creates anchor social spaces at the intersections.

9.2 Construction and Operations

In terms of construction and operation of temporary structures, a number of elements need to be considered: safety, equipment, manufacturing and shipment. Much of today’s legal system is not prepared to handle the regulations of temporary structure the way that this project intends. Fortunately, these projects won’t need to fulfill all the construction requirements, but should satisfy safety requirements stated in the building code.

The need for auxiliary equipment will add to the cost of the structure, especially if the equipment must be custom designed and built for the structure. This dependency

not only has a high cost, but can also cost time and compromise the schedule of operation. Auxiliary machinery for the transformation between “usable” and “idle” states could be justified in a project, if, for example, it is more compactable for transportation. This includes, but not limited to, the use of cranes and other larger equipment.

In terms of prefabrication of each part of the modules, one must take into consideration the pros and cons when it comes to manufacturing. Modules built by companies that already work with prefab architecture have better techniques, reduce waste materials, reduce cost and result in a higher quality final product. One also has to consider the size and scale of production. Additionally, the dimensions of the modules need to conform standard size regulations such as sea container standards and road regulations at the destination location.

9.3 Maintenance and Costs

Based on the parts that make up each module and their functions, it is important to understand the specification during the design process, the operation and performance of the module in order to get an understanding of the future operating and maintenance cost. In reality, mobile and portable structures experience rapid depreciation due to the negligence of maintenance. There are existing mobile and portable structures that are expected to possess a lifetime of 3-5 years, and projects, that with responsible management and maintenance possess a lifetime of 20+ years. The durability of the structure depends primarily on the weathering resistance of the individual components and the connections between them.[155] As a project increases in complexity, the maintenance and management of the project will also increase. It is important to consider simpler solutions in order to cut costs and time. It will also increase feasibility and, if modular, will allow for easier replacement of individual parts.[156] The capital cost depends primarily on the manufacturing of parts, shipping of modules and delivery of modules to site location. In terms of manufacturing, exploiting a folding mechanism would be the most efficient because it can be shipped with no wasted space. The cost of construction will depend on the degree and type of work to be done and the site location it will be deployed. As such,

[155] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.92
[156] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.117

it would be best to design the structure with the minimum amount of parts that is easily constructible by the average layman.

9.4 Buildings Components

When considering prefab systems, unknown circumstances can affect the functionality of the structure even when well-conceived in the design process. The success will not be apparent until the structure is made and deployed into location.[157] Even with advanced knowledge through simulation and models, it is hard to prepare for the unforeseen circumstances.

For better understanding of the structure and its range of potential, it is important to take into consideration individual building components. Majority of malfunctions in mobile and portable structures are the moving mechanisms, such as the joints and the finishes, between movable panels and components. As a result, the building components are split into three parts:

- moving mechanisms
- structure
- surface components

The moving elements provided by the construction industry provide a vast array of components to be used. To add to this, the best advantage provided by commercially available products are the availability of technical documentation and specifications, which usually have the required certifications for its use. Custom made systems would need to go through a certification process in order to be approved for use commercially, which can be long and arduous. In order to choose the right components for the project, the type of movement needed would need to be known. This lack of knowledge will decrease life expectancy and increase the difficulty of the design process. Further understanding and analysis of these types and their uses is important in choosing the right connections

Two basic movements of the x, y and z vectors can be identified: rotation and translation. The first movement, rotation, is realized when an object change orientation by rotating in the coordinate axes. The second movement, translation is a linear movement parallel to the coordinate axes. Mechanical movements in rigid

[157] Smith, Ryan E. Prefab Architecture: A Guide to Modular Design and Construction. Wiley; 1 edition (December 14, 2010).

elements can be limited to one of the two movements or a combination of the two. These movements are performed with only one degree of freedom, a hinge for rotation and a rail for sliding. The combination of them permits a variety of movements in connections with change of axis, strength and direction.

The first thing to observe when choosing a connection is its structural stability. Many movable structures once completed its transformation, constraint the connections and become a static structure, in a reversible process. This becomes important in order to distribute the load when the element is stationary. Both hinged and bearing have options in industry catalogues allowing designers to find the load specification on the technical documentations. This is one reason why commercially available products are important to considered, especially one a project will be mass produced.

Revolving joints are the most common of connections, with the ability to rotate around an axis. They usually only have a single degree of freedom of rotation with the purpose of swiveling the elements connected. Some examples are hinges, flaps which are used to open and close entire components.

9.4.1 Structure

Unlike static structures, the requirements of mobile structures differ because movements are necessary and are part of its transformations. Issues such as stiffness, stability and resistance must not be simply addressed, but controlled. Stability is essential in both its “closed” and in its “open” positions. Transformable and transportable buildings are, from a principle, reversible to enable the compact-ability and transportation between location and use. It is necessary to consider the transportation methods; it restricts the dimensions of the folded building and the overall weight. Contemplating the foundations is also an objective, it’s important to have the perfect level in the buildings for the proper occupancy and the correct function of mechanisms. Mobile architecture can be placed in different locations and with different contexts. It is important that the foundation is flexible enough to adapt without improvisations. This section will overview structural components, flat-packed components and foundations.

Movable components refer to transformable structures whose frame structure is divided into several parts that are independently supported by a secondary structure

that remain intact during movement. While the mobile components are responsible for the transformation of the space, the static structure supports the internal load and the force generated by these movements, and usually incorporates the transport method. These components are more commonly associated with this flat-pack type structures. The movable components are load bearing of at least its own weight, and in this case, of interaction with static structure frame, they are responsible for building transformations. Two main objectives can be observed in the transformations of a modular structure: the interaction with the exterior, where the internal space is a utility or storage of equipment, and the opening permits integration between interior and exterior or it can promote the change of volume, in which case, the area of internal space is multiplied for occupancy.[158]

The load distribution can be top-hung or standing system and has a directly influence by the movement and the position of connections. Standing system is when the load is transferred through the connections into the bottom of the frame.[159] In top-hung system the element hangs from the upper part of the frame which impacts structurally on the frame and its anchorage.[160] The typology of movement influences when, for example, a rotation element as a swivel or flap and the gravity exert a force perpendicular to the angle of movement.[161]

In flat-packed structures, the hardware type and folding sequence used by expandable architecture is what define the structural possibilities and form. The mechanism connectors must be capable of being locked and structural once the transformation is finished.[162] Pre-hinged construction systems, or flat packed systems, usually come in the form of a kit. Folding mechanisms are commonly used in these systems and are assembled on-site. A notable advantage is the little depth

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[158] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.119

[159] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.105

[160] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.113

[161] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.113

[162] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.44

or thickness in transportation, being able to transport a larger quantity in a same vehicle.

The foundations of flat-packed structures are one of the most crucial part of a structure project. At times, the correct leveling of the building is what can determine the correct function of connection mechanisms and mobile components.[163]. For being transportable, a project needs to foresee the different location sites and possibilities that the building may encounter in throughout its life. The project needs to foresee the benefits provide by an auxiliary equipment such as jack leveling. Some temporary buildings are set in terrains for a large period of times, and when used in terrains where elevation and grading are necessary, a higher quality of piers and pads should be specified. Traditional in-situ concrete blocks are commonly found, but not recommended as it's not possible to recover the material and a new foundation is going to have to be set in the new location. Also, the whole principle of transportable architecture is leaving the site with the smallest impact footprint.

9.4.2 Surface Components

Surface elements address the last of the three components that make up this section. It primarily discusses the envelope of structures and its material. This section will review materials primarily for surface materials. Surface materials in this type of building should not only perform properly as enclosure, but they should also resist repeated movement and environmental changes before, during and after transformation.[164] Also, the skin contributes to the weight of the construction and in the dimensions of movable elements and lightweight materials should be considered at all times.[165] Industry made products offer a variety of options with different characteristics that should be considered at the beginning of the project. Lifecycle estimation of the skin material is considered the best way to keep the low cost

[163] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.115

[164] Asefi, Maziar, and Aysan Foruzandeh. "Nature and Kinetic Architecture: The Development of a New Type of Transformable Structure for Temporary Applications." *Journal of Civil Engineering and Architecture* 5.6 (2011): n. pag. Print. P522.

[165] Schumacher, Michael. Move, Architecture in motion. Birkhäuser Architecture; 1st Edition. (March 10, 2010). P.48

maintenance of a temporary mobile structure. The following chart lists material considerations:

Material Considerations	
Materials	Description
Translucency	The necessity of internal natural illumination; external elements provide security and privacy functions.
Fire Safety	For facing different environmental conditions in each transformation moment or in the different location, transformable buildings are more vulnerable in comparison with static architecture. Noncombustible materials, that shrink and do not fall down when they are affected by heat, can decrease risks of fatalities in case the structure collapsed or fail to operate.
Mechanical Resistance	If the materials are being used as structure elements, the rigidity at some point will be mandatory. But been used in as a cover material it all depends on the structure and the movement expected. The frequency of the opening and closing and the bend capacity expected of the material should be consider.
Cleaning	The best material options would be ones which prevent that particles to stick to the surface and are easily rinsed.
Recycling	Recycling is complex, mostly due to methods and treatments used that components go through to have a longer life against weather and animals. Chemical paints and treatments used as base for conserving the structures is also a problem, for example, in the shipment containers, where the based paint has chromate, phosphorous and lead and the flooring have pesticides with arsenic for long-lasting in the sea environment. This makes the structure itself uninhabitable.

Figure 116 Material Considerations[166] [167] [168]

[166] Asefi, Maziar, and Aysan Foruzandeh. "Nature and Kinetic Architecture: The Development of a New Type of Transformable Structure for Temporary Applications." *Journal of Civil Engineering and Architecture* 5.6 (2011): n. pag. Print.
[167] Werner, Carolina De Marco. (2013). Transformable and transportable architecture: analysis of buildings components and strategies for project design. Unpublished master's thesis. Universidad Politécnica de Cataluña, Barcelona, Spain. P42.
[168] Werner, Carolina De Marco. (2013). Transformable and transportable architecture: analysis of buildings components and strategies for project design.

9.5 Design Precedents

9.5.1 Nebula: Arts Access Victoria pod

Project Information	
Type	Pod / Container
Structure	Static Frame with kinetic tensile component
Architect	Maynard Architects
Client	Arts Acess Victoria
Year Constructed	2012
Location	Melbourne, Austrailia
Function	Cultural

Figure 117 Nebula, project information

Nebula was devised by the artists of Art Day South, located in Australia, one of Arts Access Victoria's weekly arts programs. They wanted to create a studio, with artists with disabilities in mind, which was accessible to artists across in Dingley, Melbourne, where the project is located.

Design	
Flexibility	The expansion is not prewied, but the flexibility is possible through the opening of side wings, which generates an stage area.
Mobility	Initial dimentions : 279x280x509cm Gross Floor Area: 14.8m2 – closed, 62.4m2 – open The secondary frame absorvs a axel/wheel transport that works as a compact cara-van.
Constuction	Interior space for storage during transportation or when in a closed position. Side wings can have the membranes open and close changing the relation with exte-rior.
Maintanence and Cost	
Life Expectancy	Highly efficient structure built for a long adaptable life.
Management	The structure and materials are panelised and easily replaceable.
Cost	No information.
Construction and Operation	
Safety	No information about safety mesuares, only that the buildings has accessibility.
Auxilery Equipment	Needs to be conected in a car for transportation.
Manufacturing	Custome "one-off", constructed by firm specializing in metal profiles.

Figure 118 Nebula, design information

Unpublished master's thesis. Universidad Politécnica de Cataluña, Barcelona, Spain. P42

Nebula can be transformed into a gallery, workshop or seminar space or performing arts venue, placing function as the center. Nebula accommodates any type of creative work produced by artists with disabilities and offers opportunities for creating site-specific work. Through this, spaces become more inclusive for those with disabilities.

Building Components		
Movable	Structural	Surface Material
• Rotation of movable elements conected with hinges, powered and movement control by gears and ropes.	• Kinetic Components with static secondary frame • Hand-operate jack leveling. Powered opening.	• Uses aluminiun in the structure and skin, membrane in side wings covers. • The frame of the structure is seal with rubber, not the frame of elements. • Eletrical power ready to plug-in with a solar panel and battery for 4hours.

Figure 119 Nebula, building component information

The project brief called for flexibility in that it must be mobile and possess multiple functions: theater space, meeting space, workspace, and gallery space. The goal for Nebula was to “ambush” spaces within the city.

Figure 120 Nebula, preliminary render

Figure 121 Nebula, northwest exploded axonometric diagram

Figure 122 Nebula, northeast exploded axonometric diagram

9.5.2 EDV-01

Project Information	
Type	Pod / Container
Structure	Static Frame with kinetic tensile component
Architect	Yasutaka Yoshimura
Client	Diawa Lease
Year Constructed	2011
Location	Japan
Function	Shelter / Laboratory

Figure 123 EDV-01, project information

The EDV-01, developed by Japanese industrial company, Dawia Lease and architect Yatsutaka Yoshimura, is an ‘emergency disaster vehicle’, where EDV portion of the name is derived. It is a self-contained shelter that is autonomous and easily transportable. The size of the module conforms to shipping container specifications, allowing it to take advantage of the infrastructure that is already in place to hand those standardized dimensions. This allows it to be easily assembled and fully working in a relatively short amount of time.

Figure 124 EDV-01, perspective diagram

Design	
Flexibility	Expanding container
Mobility	first floor:605×259×243cm; second floor:605×451×243cm Total floor area : 21.14sq.m Max. height : 4.591mm. The 10-ton container-sized unit can travel by ship, truck, or even helicopter.
Constuction	Structure : Steel ; The first floor is for storatge and equipment with a ladder providing access to the second story, which is a large room with a desk at one end and a couple bunks at the other.
Maintanence and Cost	
Life Expectancy	Not informed
Management	Not informed
Cost	Capital cost started at 50,000 dollars.No additional information.
Construction and Operation	
Safety	Not informed
Auxilery Equipment	Auxilery equipment only for transportation
Manufacturing	Commercially available, but no informations about manufacture. Can be shiped over seas.

Figure 125 EDV-01, design information

A hydraulic lift raises the outer shell that creates a second-story space. The dwelling area consists of a kitchen and bathroom on the first floor, and living area in the upper level. It is equipped with solar panels and a lithium based energy storage for self-sufficiency. It also holds an 800 liter water tank, composting toilet, and drinking water station are sufficient for a month of inhabitation by two adults.

Building Components		
Movable	Structural	Surface Material
• Sliding mechansims, autho-matic lift system and auto leveling. • Deployable in 260 seconds	• Kinetic Components with static structure, the enve-lope slides upway to doble the internal area. The retractable double-shell de-sign means twice as much space inside the unit. • Automatic lifting and lev-eling	• Its completely autonomous for at least one month: the electricity produced by solar and electrolysis.

Figure 126 EDV-01, building components

Figure 127 Figure 140 EDV-01, perspective section

9.6 Final Component Considerations

In terms of buildings components, it is important to highlight the relation between materials, structure and mechanical connections. The connections should be weather resistant and structurally stable while permitting the movement required. Preferably, even if an automatic system is available, the build should be able to be transformed using only the human strength. External forces, as wind, should be take into consideration when projecting; the extreme weather conditions should be considered depending on the project objectives, use and destination. Transportation methods have to be incorporate in the final structure, as a wheel system or lifting points, and the loads be even distributed to prevent deflections and damages in the elements.

Lightweight efficient materials need to be considered in order to minimize cost, lower weight of the build, and be resistant and thermally. The seal between movable elements and connections is essential to maintain the water and wind proof of the interior, needing to be flexible enough to don't compromise the mechanical functionality of elements. Flexible materials as plastics neoprene can adapt to the joint form and maintain the elasticity and integrity properties for longer periods. Properties as thermal insulation, fireproof, water resistance, folding resistance also need to be considered.

Most of projects being built today are done in precarious and improvised locations, without any technique or quality control. Some of the modules, that are commercially available, are constructed by industries that already work with prefabricated architecture, and the transformable buildings come as an experiment for transport solutions. Transportability is probably the most important aspect of transformable buildings, which take full advantage of transportation and reduce to a minimum the empty space inside the folded form.

10 Interstitial Design Intervention

10.1 Module Design Intent and Concept

As an indicator of economic and social change, the module hopes to provide spaces for activities that do not claim a permanent space. It hopes to inhabit the city as magazine kiosks, parking attendant booths, market stands, and bus shelters or vending stalls, easily visible and accessible. The simplified functional design allows them to fit almost any location. The goal for the design is to provide a modular transitional space for the use a variety of functions. Another goal for the design was the ability to be installed or dis-mantled in the span of 2 hours or less while still possessing the durability and strength to last in a single location for a longer amount of time.

The module comes in two sizes, 3.5’ x 7’ and 7’ x 7’ base modules wall modules. The floor modules measure 3.5’ x 3.5’ and can be used both in the exterior and interior. These two sized modules can be joined to create different spaces based on function and location, spaces such as communal spaces, bathroom facilities or recreational space. They can also be left separated, creating exterior spaces. The project aims to offer an empowering solution for rapidly taking advantage of areas within our urban fabric for the benefit of the city’s most vulnerable population.

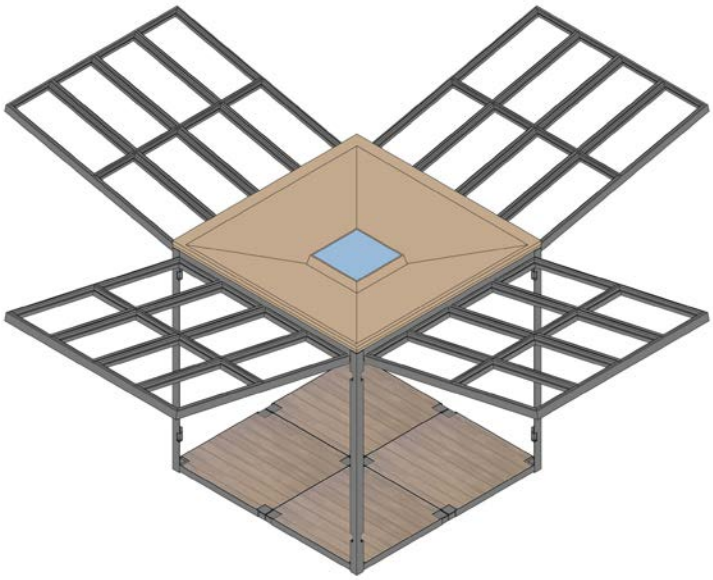


Figure 128 Single module, open, no panels on door component.

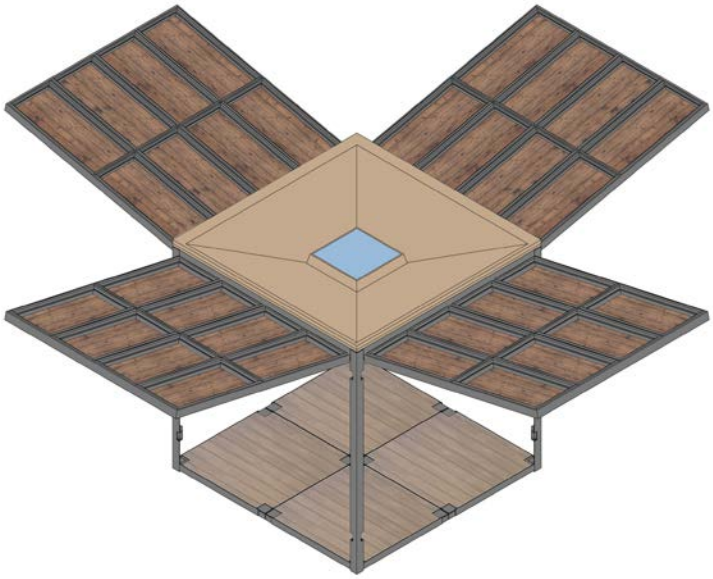


Figure 129 Single module, with wooden panels on door component.

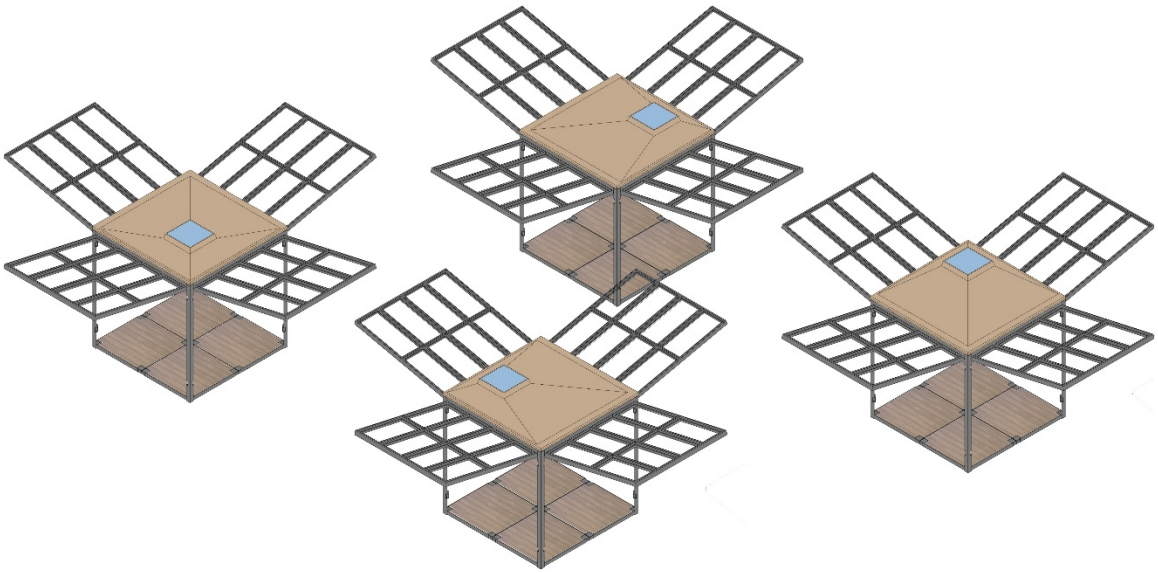


Figure 130 Multiple modules, separated, open, no panels on door component.

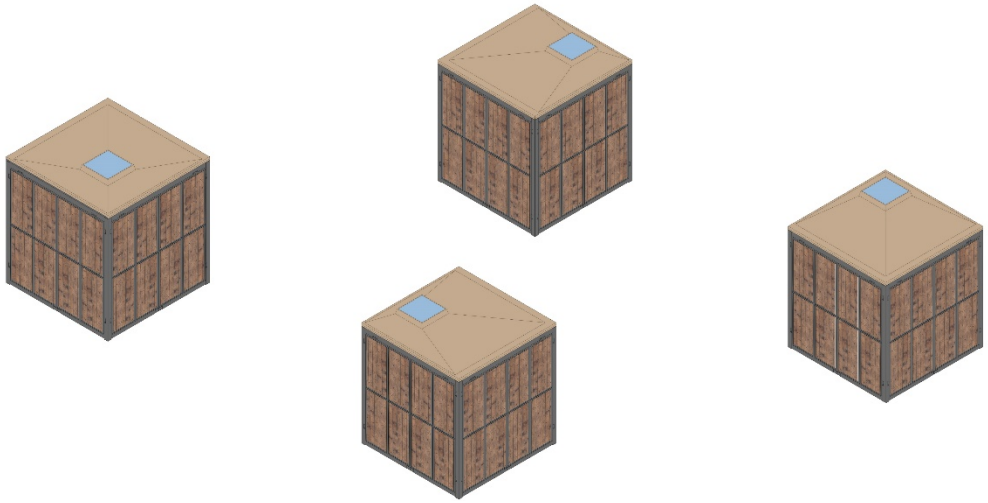


Figure 131 Multiple modules, separated, closed, with wooden panels on door component

10.2 Module Components

10.2.1 Roof Component

The kiosk is covered by a square asymmetrically sloped roof with a skylight opening. The roof of the kiosk covers the entire footprint. Coupled with the upward-hinging doors, the module provides optimal sun protection regardless of its location, a multipurpose module. The roof of every module, although possessing a different function, will conform to a similar style and design aesthetic so as to allow the module to become recognizable within the urban fabric as an icon or landmark.

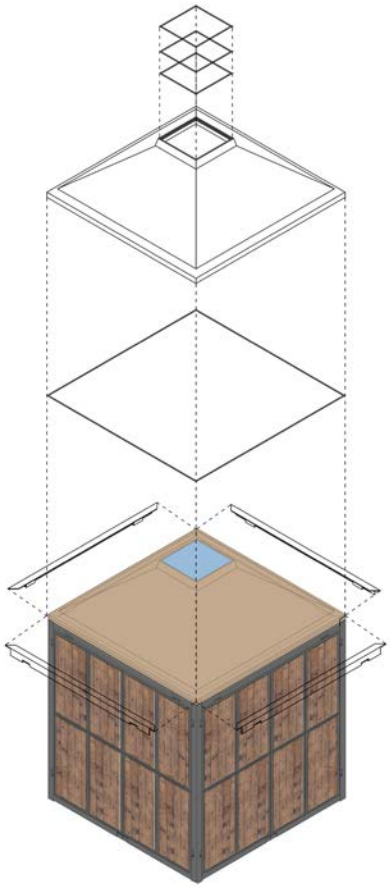


Figure 132 Exploded roof axon diagram

Figure 133 Roof module elevation

Figure 134 Roof module plan

Figure 135 Roof module material diagram

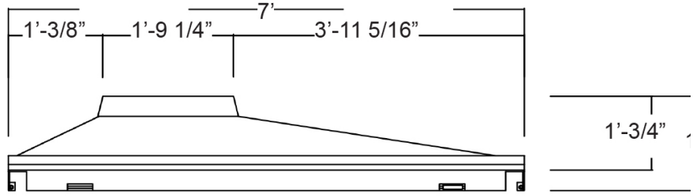


Figure 133 Roof module elevation

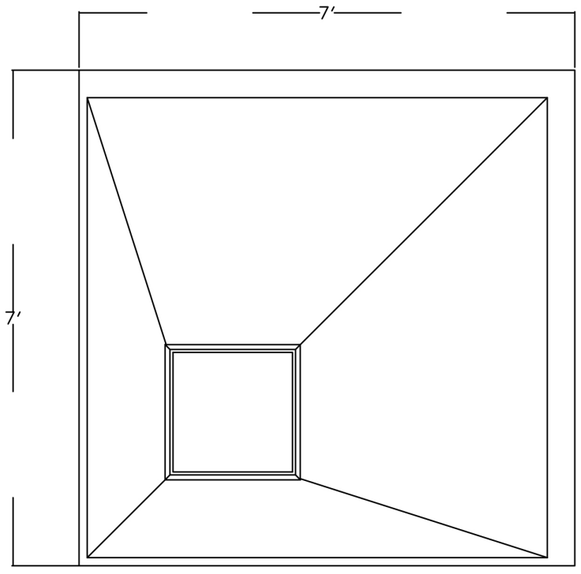


Figure 134 Roof module plan

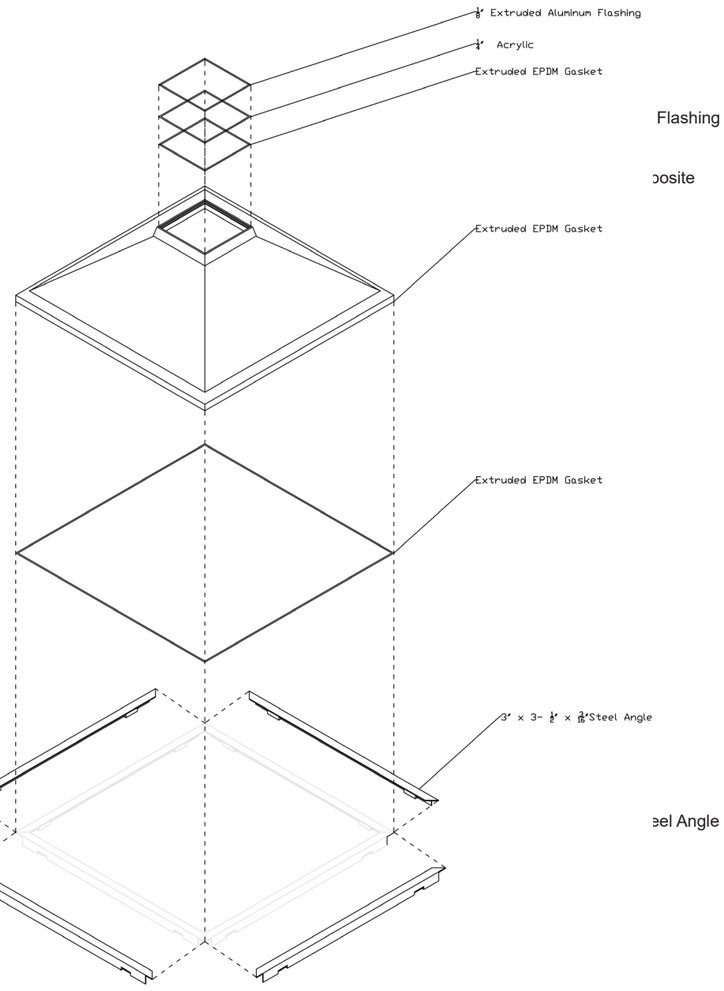


Figure 135 Roof module material diagram

10.2.2 Structural Column Component

The entire module is held up by for structural columns made of steel structural angle measuring 3” x 3” with a thickness of 1/4”. At the ends of the column are a metal plate welded to the column with holes to allow a bolted connection to the roof and floor components. Along both edges of the column, hinge holes have been placed to allow for a surface component, acting as a door, to be able to swing open from either side.

Figure 136 Steel column isometric

Figure 137 Steel column elevation

Figure 136 Steel column isometric

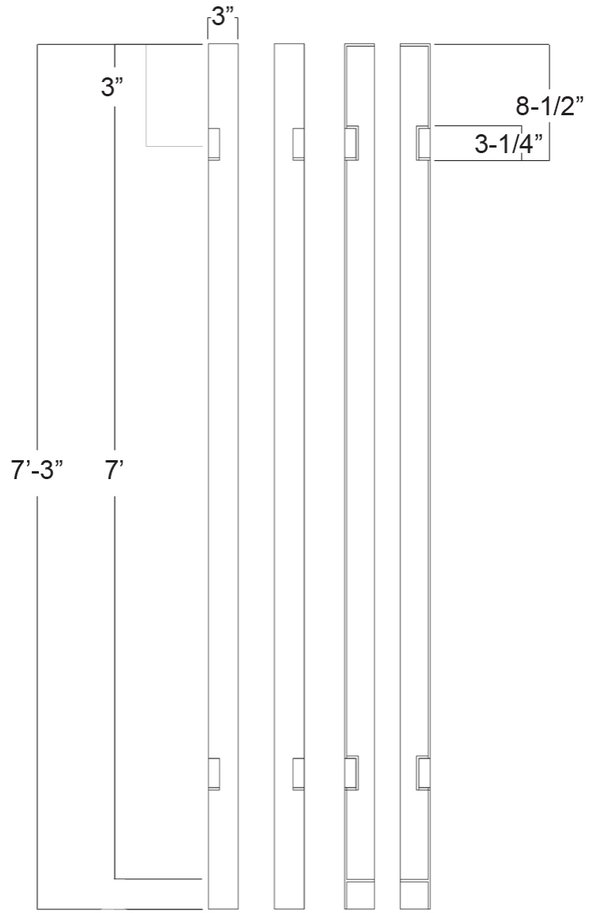


Figure 137 Steel column elevation

10.2.3 Door Component

As to allow for the maximum of flexibility, the surface was designed to be able to open via hinge on the left, right or from the top. Door is made of 1” x 2” x 0.118” galvanized rectangular steel sections with variety of surface material that fit with each sections of the frame.

The door component can be used as is or customized or designed based on the needs of the designated function. Panels are locked into each section of the frame, sandwiching any surface material chosen by the owner of the module. Although the form and aesthetic between each of the modules are uniform, the aim is allow owners to make each module their own by inputting their own material into each of the panel modules further reinforcing the module’s sense of place within that area.

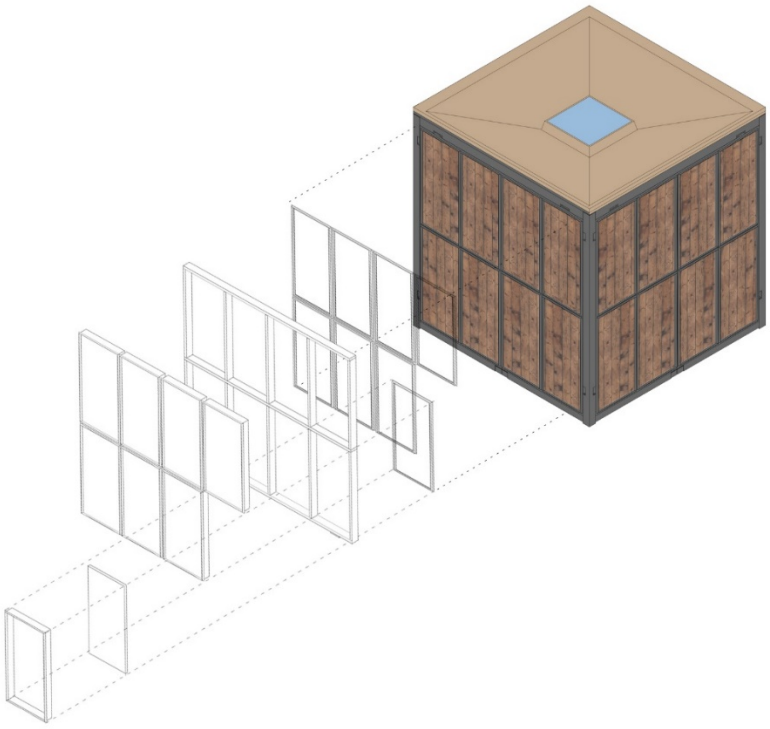


Figure 138 Isometric highlight door module components.

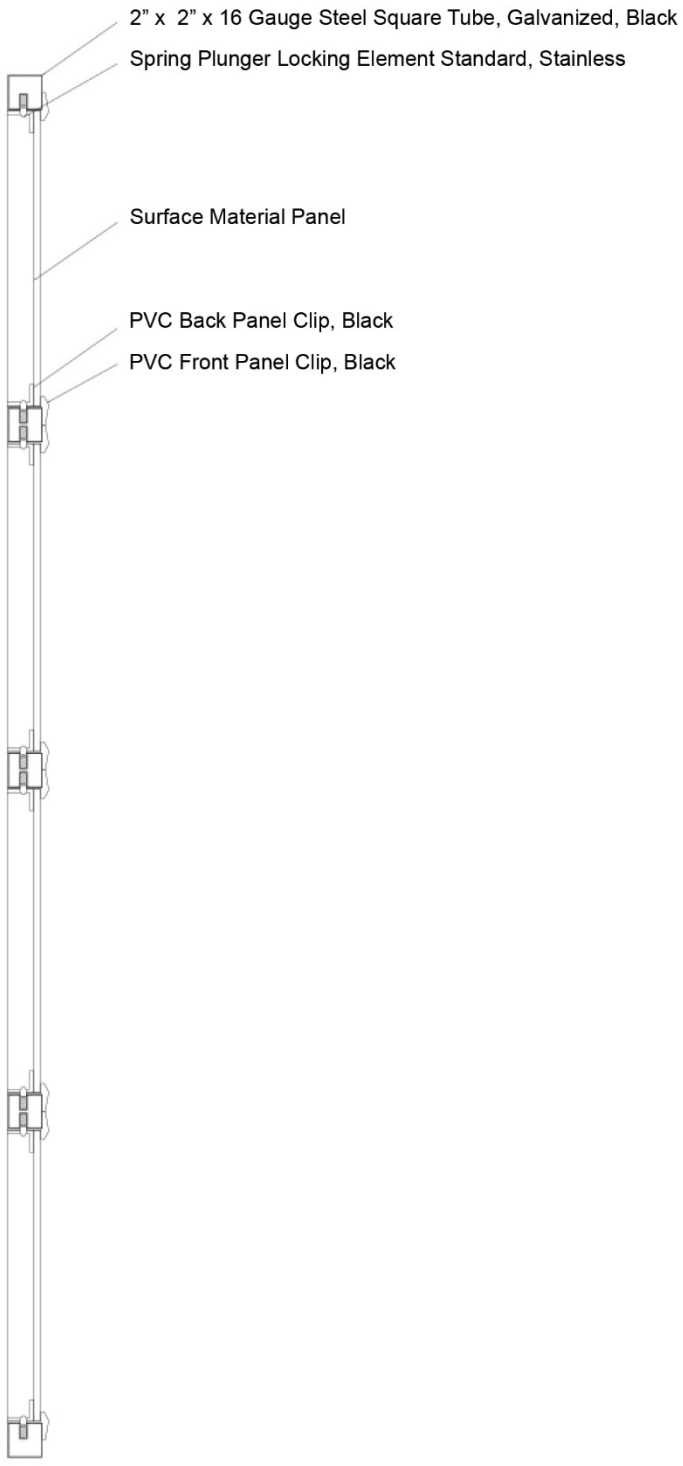


Figure 139 Door module section

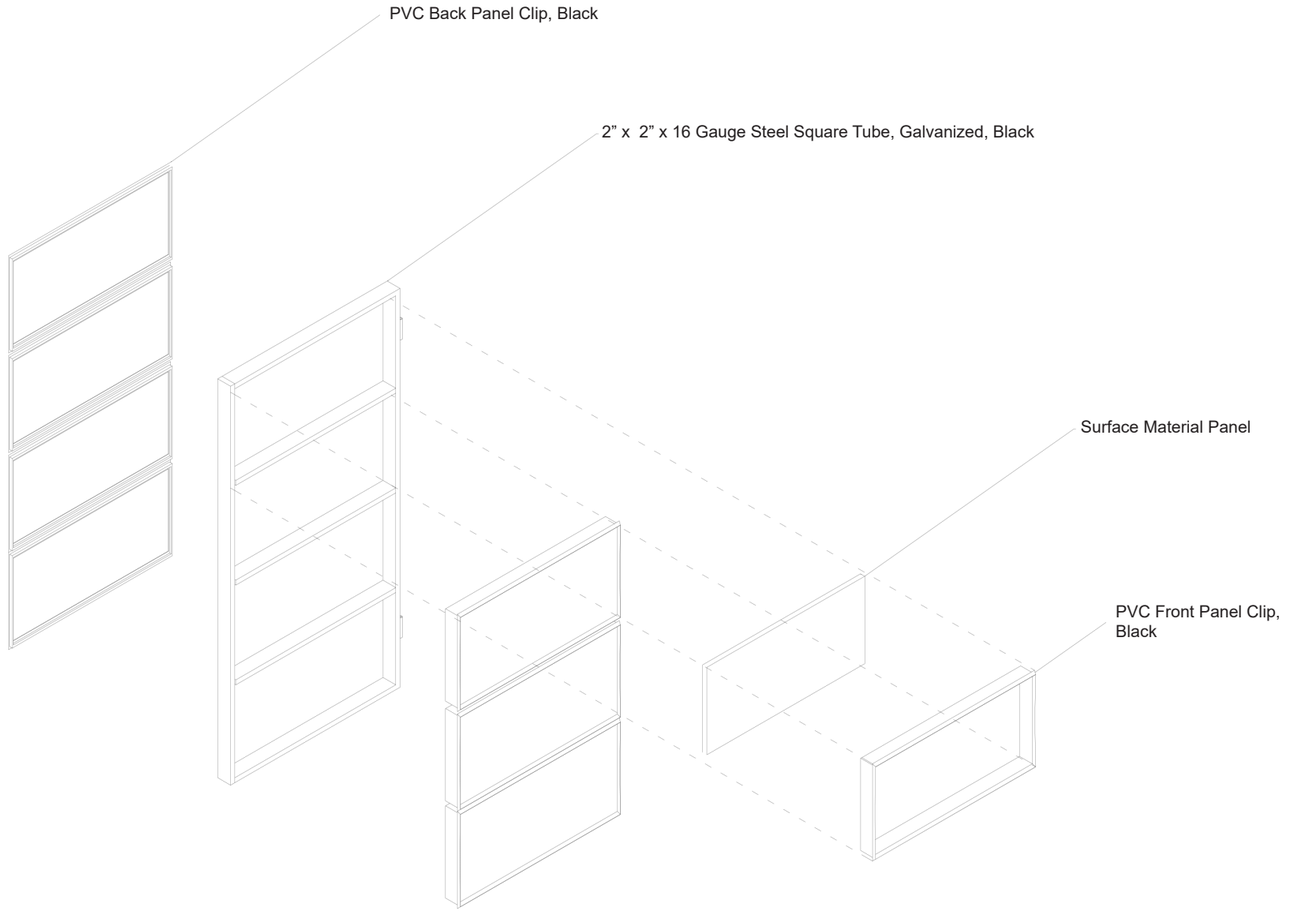


Figure 140 Door module (3.5’ x 7’) material diagram

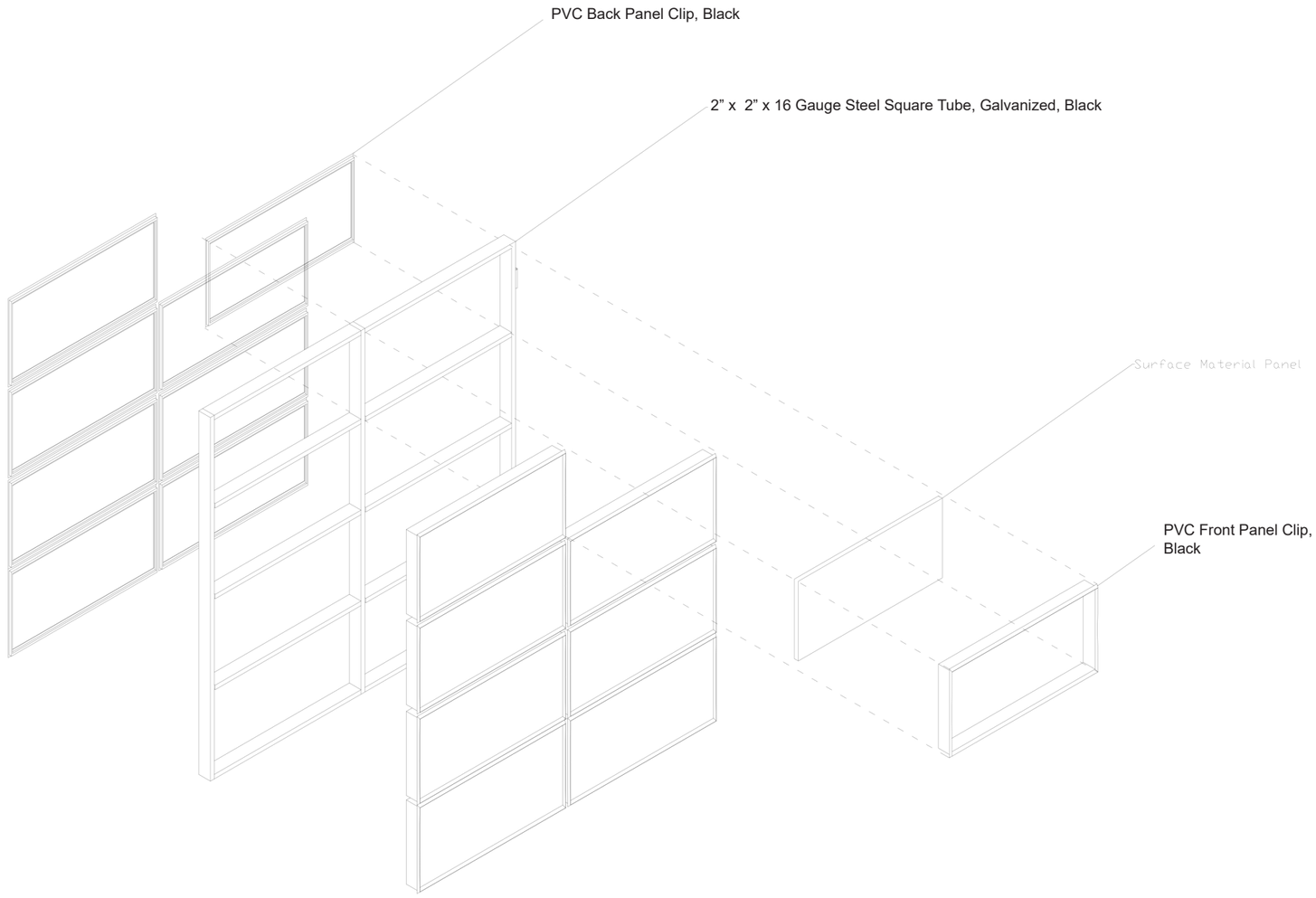


Figure 141 Door module (7’ x 7’) material diagram

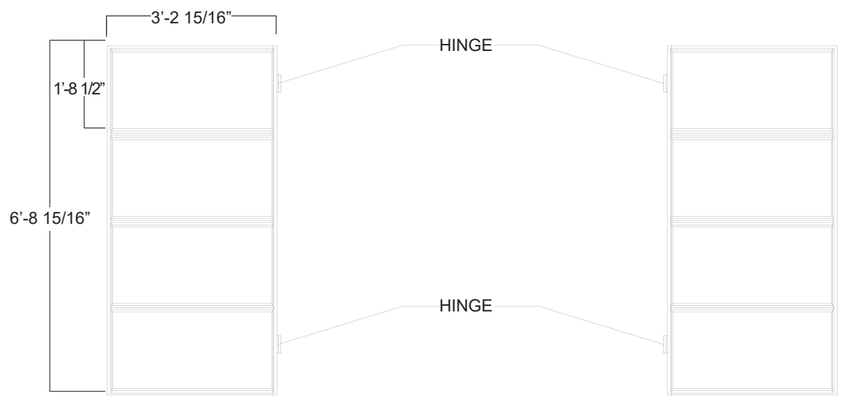


Figure 142 Door module (3.5' x 7') elevation

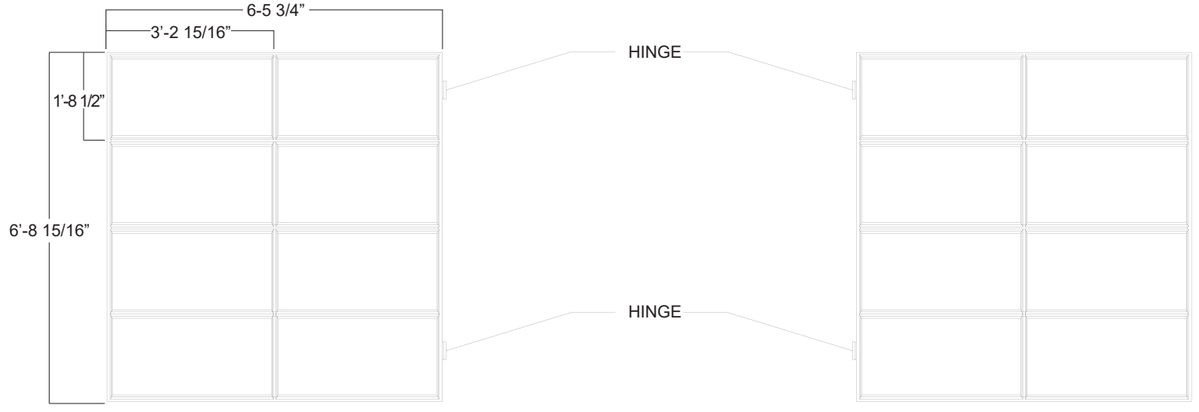


Figure 143 Door module (7' x 7') elevation

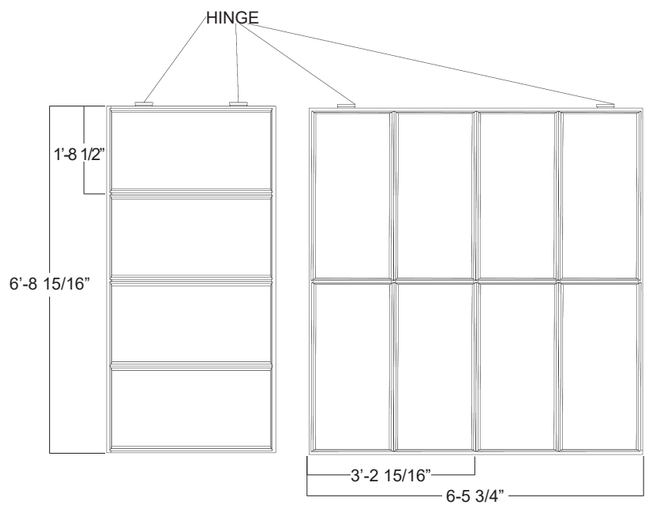


Figure 144 Door module (3.5' x 7') and (7' x 7') top hinge elevation

10.2.4 Floor Component

The floor component measures 3.5’ x 3.5’ whose structure is made of a square steel frame made of 2” x 2” square hollow section with a cross beam in the center. The corners of module are steel plates with threaded rods protruding from the plate to be bolted to the structural column. The steel plate also is a connecting point for the footing located at the corners, with 1 footing at each of the corners and another at the center, totaling to 5 for each module.

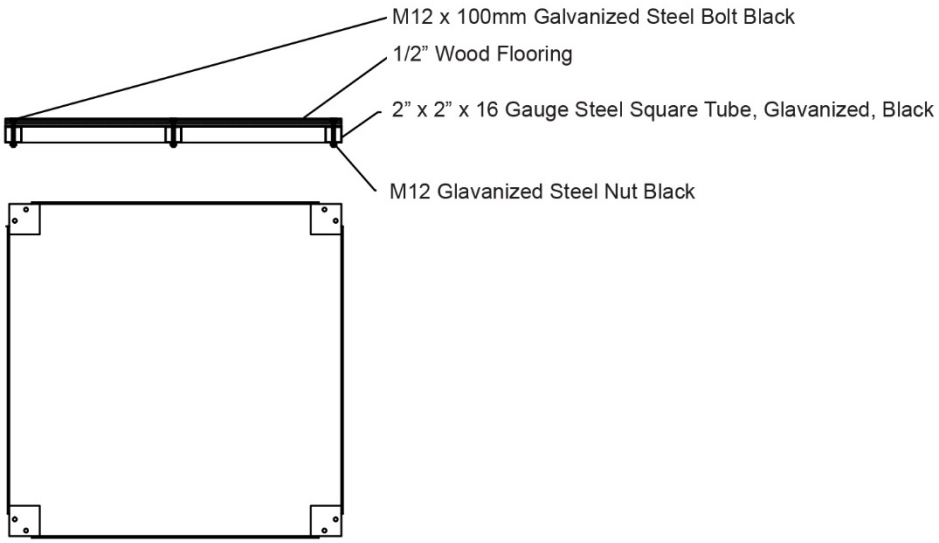


Figure 145 Floor module section and top view.

10.2.5 Footing Component

The footing components are rigidly connected to the underside corners of the floor modules. Each leg can be individually adjusted by 1/4” increments up to a total of 10” in order to raise or level the structure.

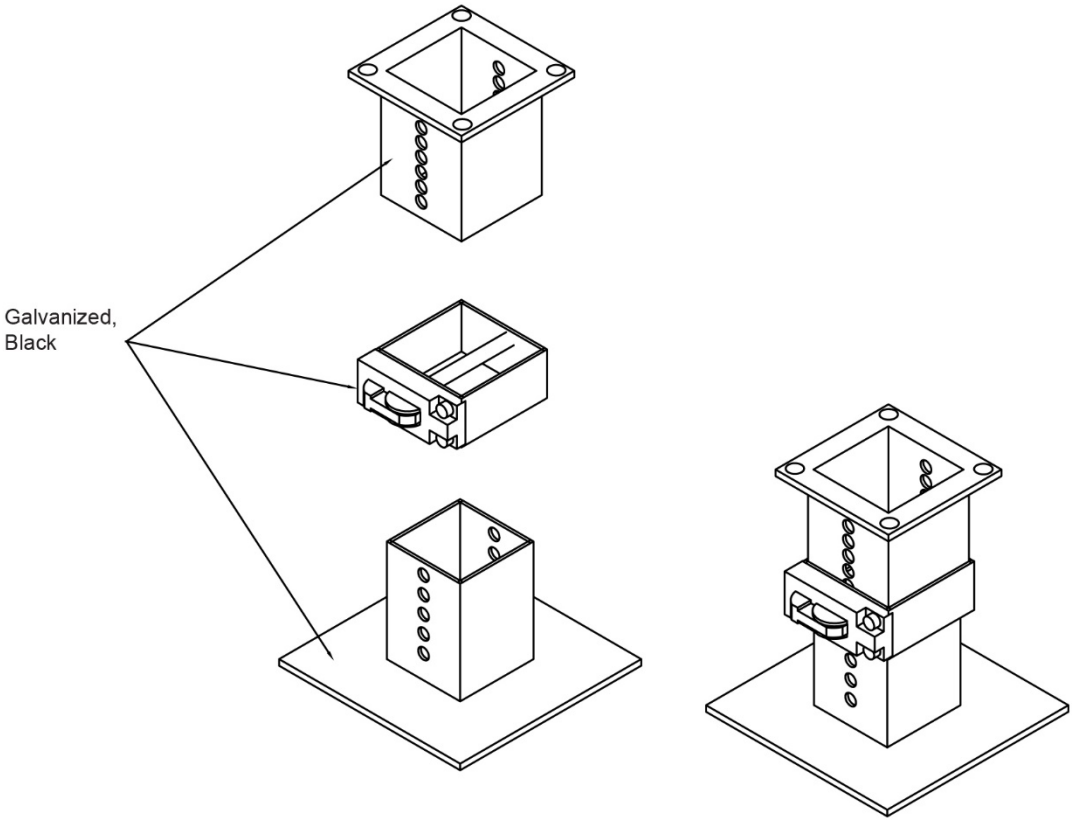


Figure 146 Isometric of footing parts (Left), Isometric of footing assembled.

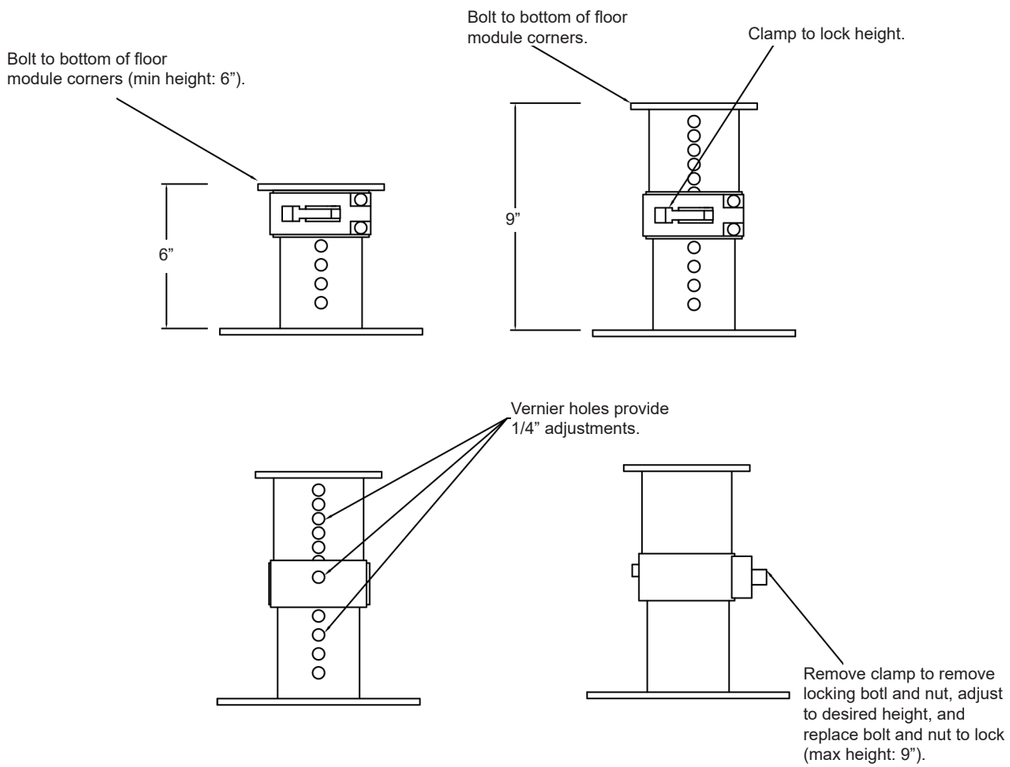


Figure 147 Footing module elevation

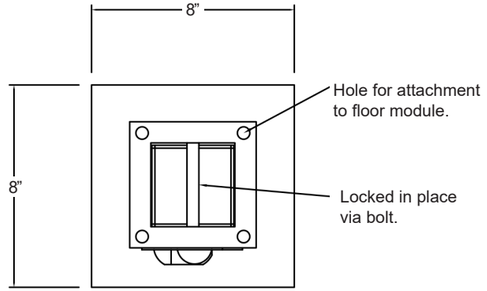


Figure 148 Footing module plan

11 Site Layout Design

11.1 Dillingham x Kohou

11.1.1 Site Background

Due to the large scale of the chosen site, the intervention will only take up a small portion of the site. The intervention will be located southern end of the lot due to the proximity of a Palama Market-place, a grocery store, to the north.

Both sides of the canal possess major differences. On the Punchbowl side of the canal, Kokea Street is primarily used as street parking for commuters who attend the Honolulu Community College. Located on the ‘Ewa side of the canal, Kohou Street possess properties primarily owned by Kamehameha Schools, which currently has leases. Due to low traffic volume of Kohou Street, there is opportunities for flexible or complete streets in addition to street furniture, gathering spaces and vendor offerings.

Figure 149 Dillingham x Kohou site overview

Figure 150 Dillingham x Kohou site with landowners marked

This site was chosen due to its historic and cultural significance. Once a primary source of water for the area, the canal provided sustenance and resources for the people. This portion of the site was also chosen due to its distance to the bridge, as there is no other method of crossing the canal within walking distance. Around this site, there is a lack of activity, not enough shade and large swathes of usable area are not accessible.

11.1.2 Final Design Considerations

The surrounding neighborhood possesses a multitude of architectural styles and building types, giving it a unique characteristic. The community itself consists of a multi-ethnic and multigenerational population, primarily of Asian descent. With the upcoming construction of the rail directly across the canal and the lack of residential housing in the immediate vicinity, the appropriate number of modules for this site would be 2 modules, with possibility of adding more as activity increases as development nears completion.

Figure 151 Dillingham x Kohou Intersection [169]

[169] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

A 7’ x 7’ grid was overlaid to organize and understand the size limitations of the site. The site limits the intervention to two modules in width. The terrain onsite is uneven and a number of floor modules would be needed on the exterior to create a path to the intervention due to lack of sidewalks on this side of the canal.

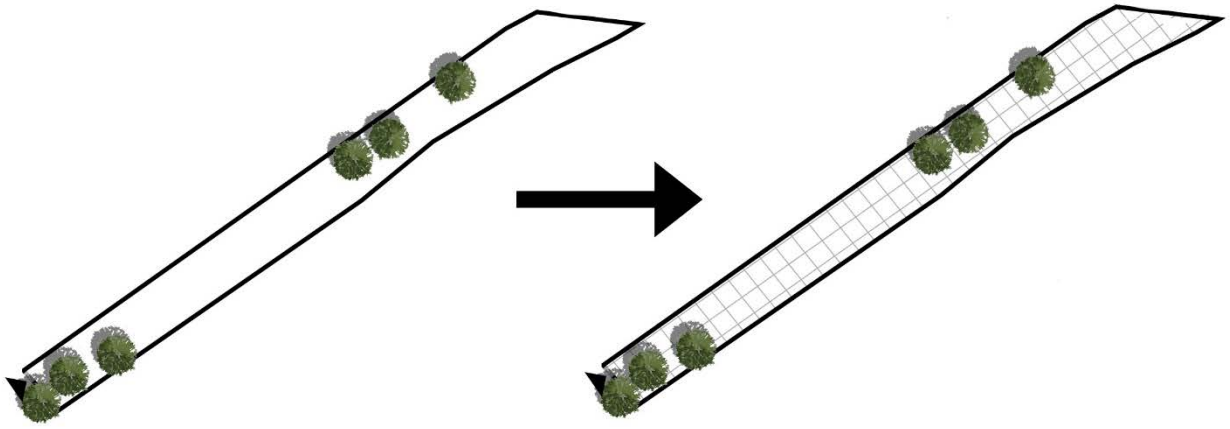


Figure 152 Grid Overlay on site boundary

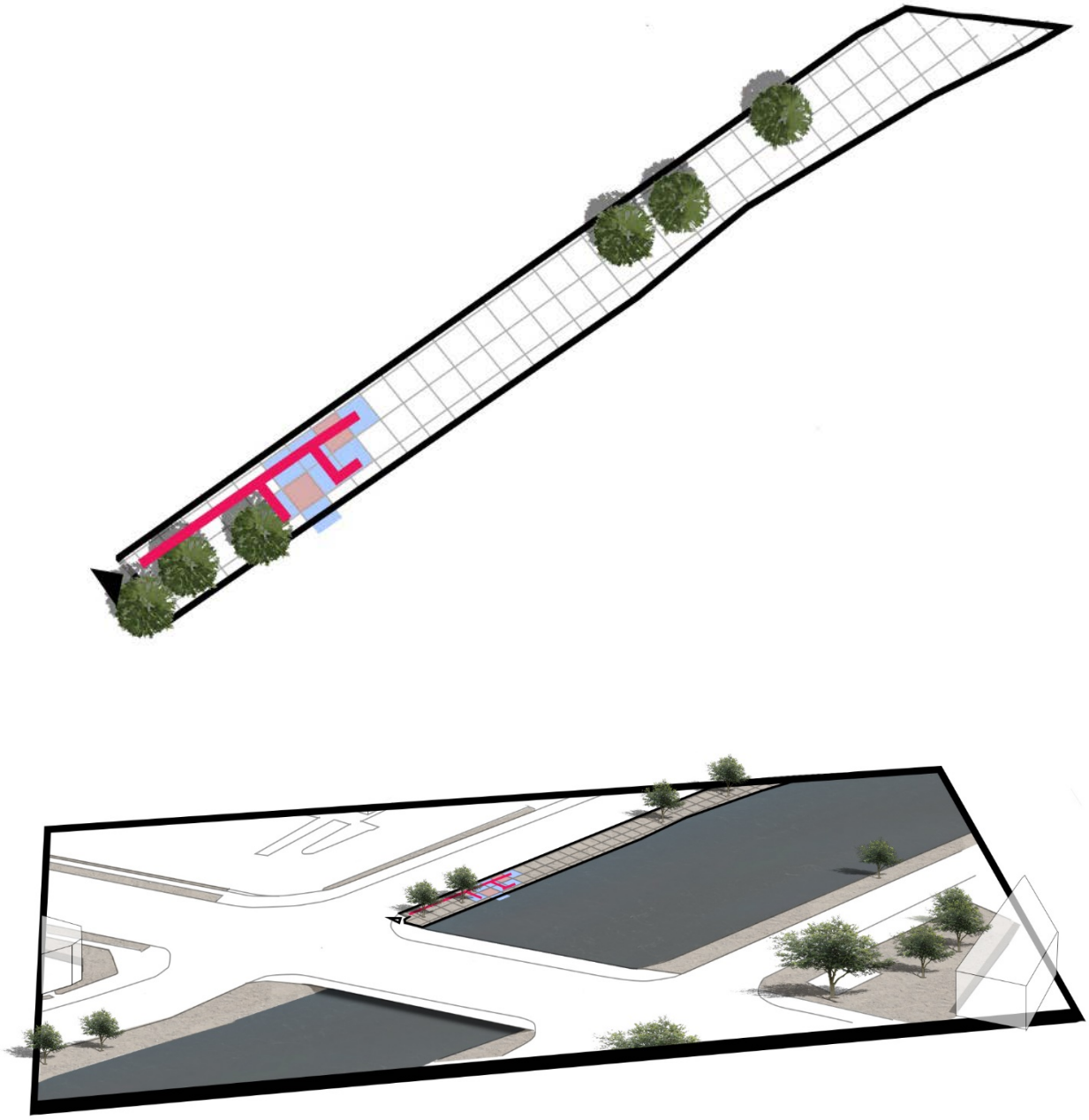
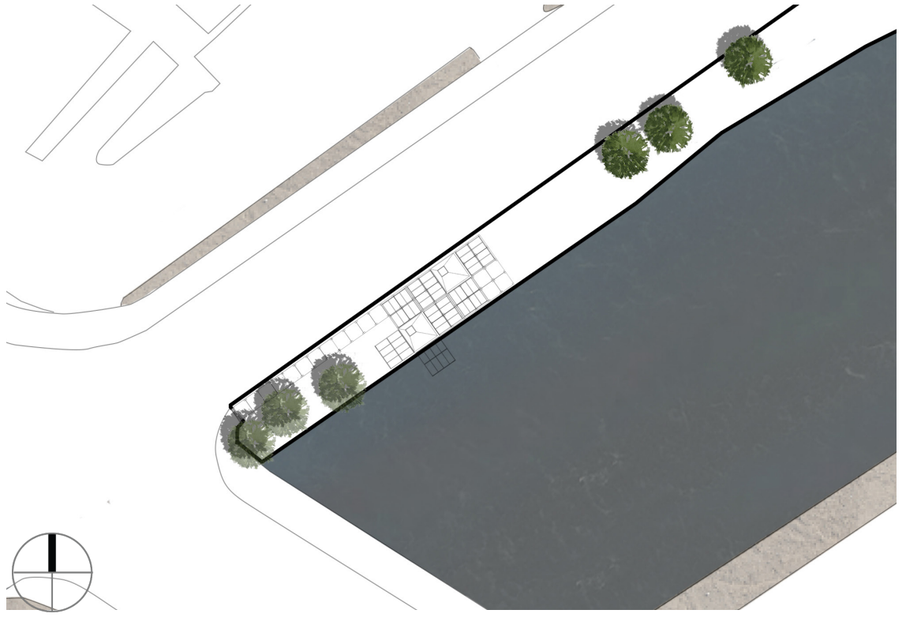


Figure 153 Dillingham x Kohou circulation

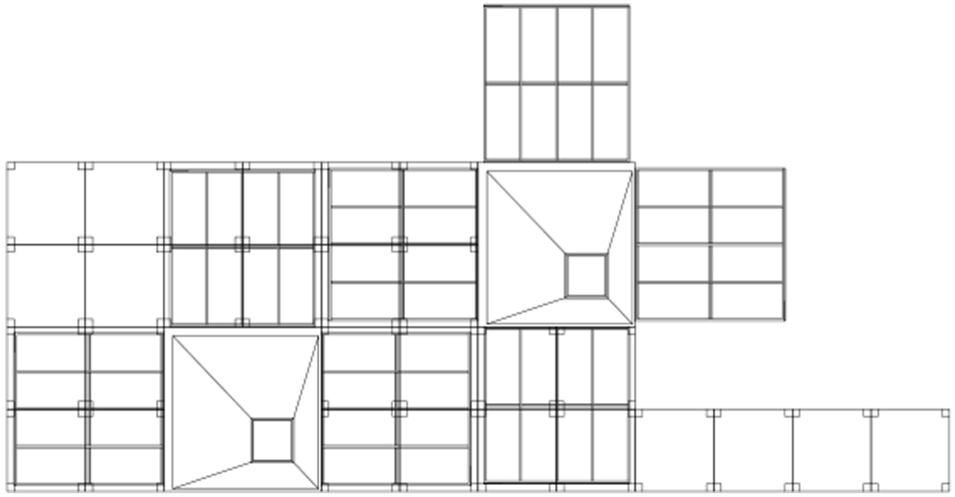
Kapālama Shopping Center is located within walking distance from the site and is highly trafficked by locals. There is a number of eateries located in the Center but should not deter customers from visiting the grocery vendor as all existing eateries only deal with already prepared food products.

11.1.3 Dillingham x Kohou Conclusion

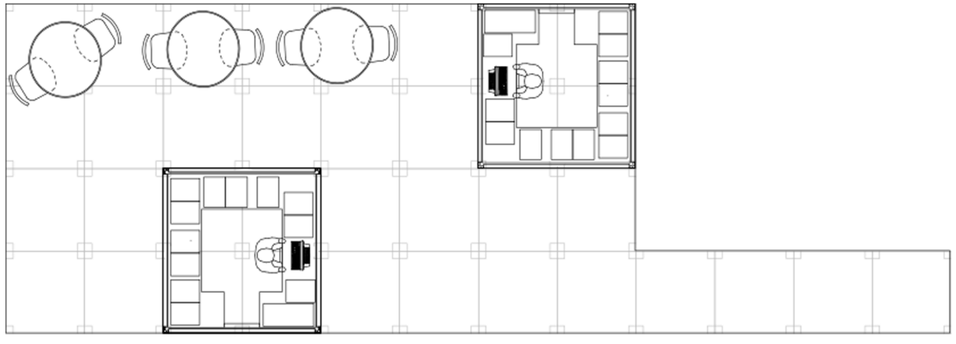
The implementation of this model hopes to act as a starting point for the community to interact within the community to nurture the canal area's character and identity. Many within the community have forgotten the cultural significance of the canal and the importance of water. The increase in activity with close proximity to the water should bring awareness to the canal; to allow for the surround community and commuters to envisioning a healthier natural environment.



Dillingham x Kohou Site Plan



Dillingham x Kohou Roof Plan



Dillingham x Kohou Floor Plan

Dillingham x Kohou Elevation

Dillingham x Kohou Section

11.2 Colburn x Waiakamilo

11.2.1 Site Background

The second chosen Kapālama Canal Site is located on Colburn and Waiakamilo. It was once the site of a Lex Brodie's Tire, Brake & Service Company which had close for business due to environmental matters. It is now a flat lot currently used as surface parking with a fence around the site with a driveway entrance to north-west and the northeast.

Figure 154 Colburn x Waiakamilo site overview

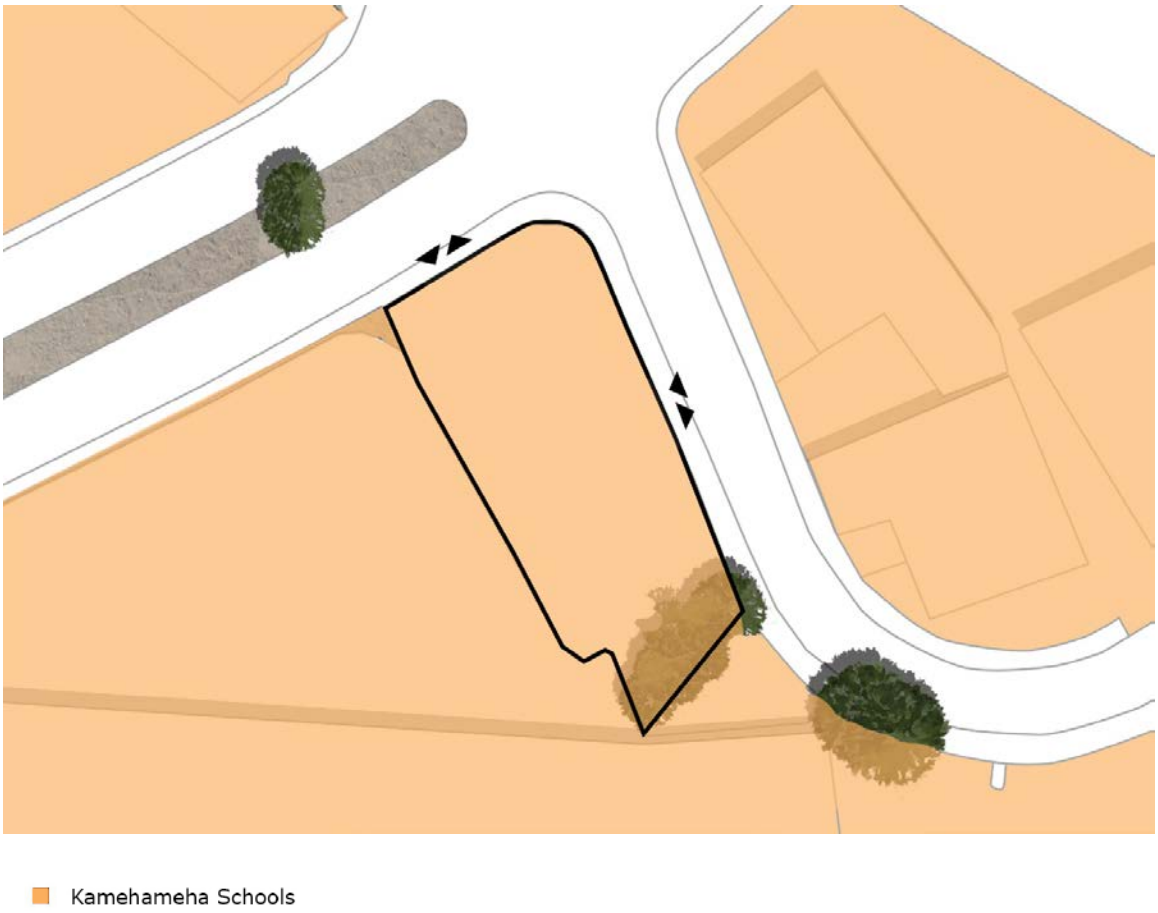


Figure 155 Colburn x Waiakamilo landowner

The Colburn x Waiakamilo site was primarily chosen due to its location. Of the possible site, after filtering, it was the southernmost remaining potential site. Users located south of the station or along Nimitz Highway are few of the people who do not have easy access to fresh produce. Additionally, the number of homeless begins to grow as you move further south. This site was chosen due to being the first potential site to those residing south of the station.

11.2.2 Final Design Considerations

The lots adjacent to the site are primarily industrial properties, auto services and retail and as a result the characteristic of these buildings are larger corrugated metal warehouse type or CMU block buildings. Much of the area is paved with little to no outdoor seating or green space.

Figure 156 Colburn x Waiakamilo Intersection[170]

[170] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

Again, similar to Dillingham x Kohou, this site has high traffic retail in the vicinity but due to its location, is relatively low traffic. With this amount of foot traffic from the City Square Shopping Center in close proximity, the potential for this site is much higher. As a result, the amount of different vendors that can be located here is higher, which is possible due to the large lot area. Taking these aspects into consideration, the amount minimum number of modules allotted is 6, to allow for a larger number of vendors of different vendors.

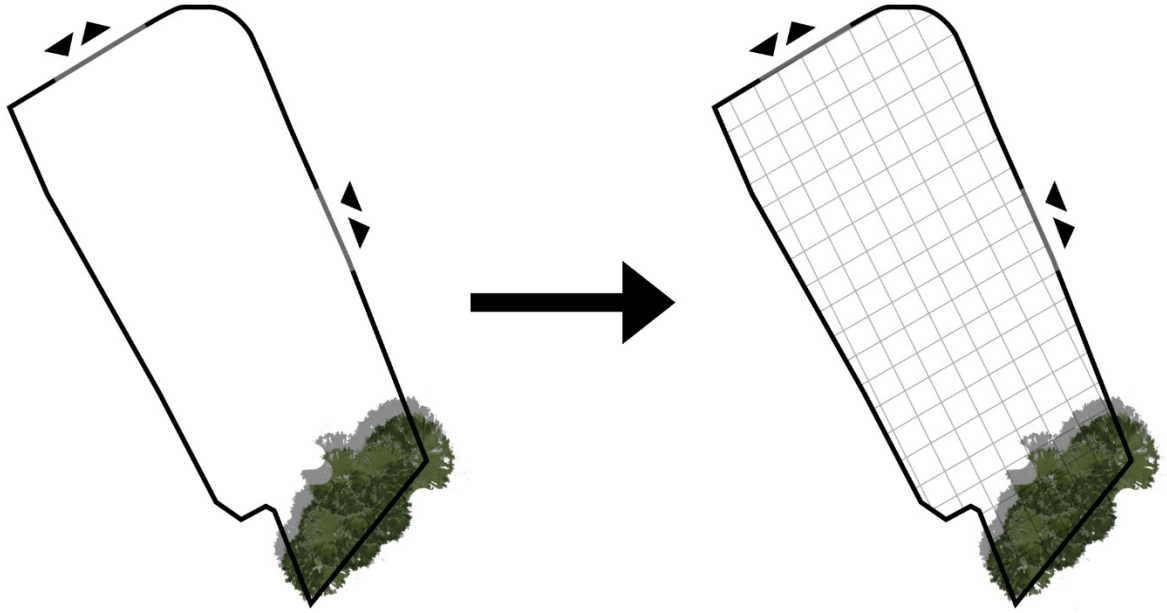


Figure 157 Colburn x Waiakamilo grid overlay

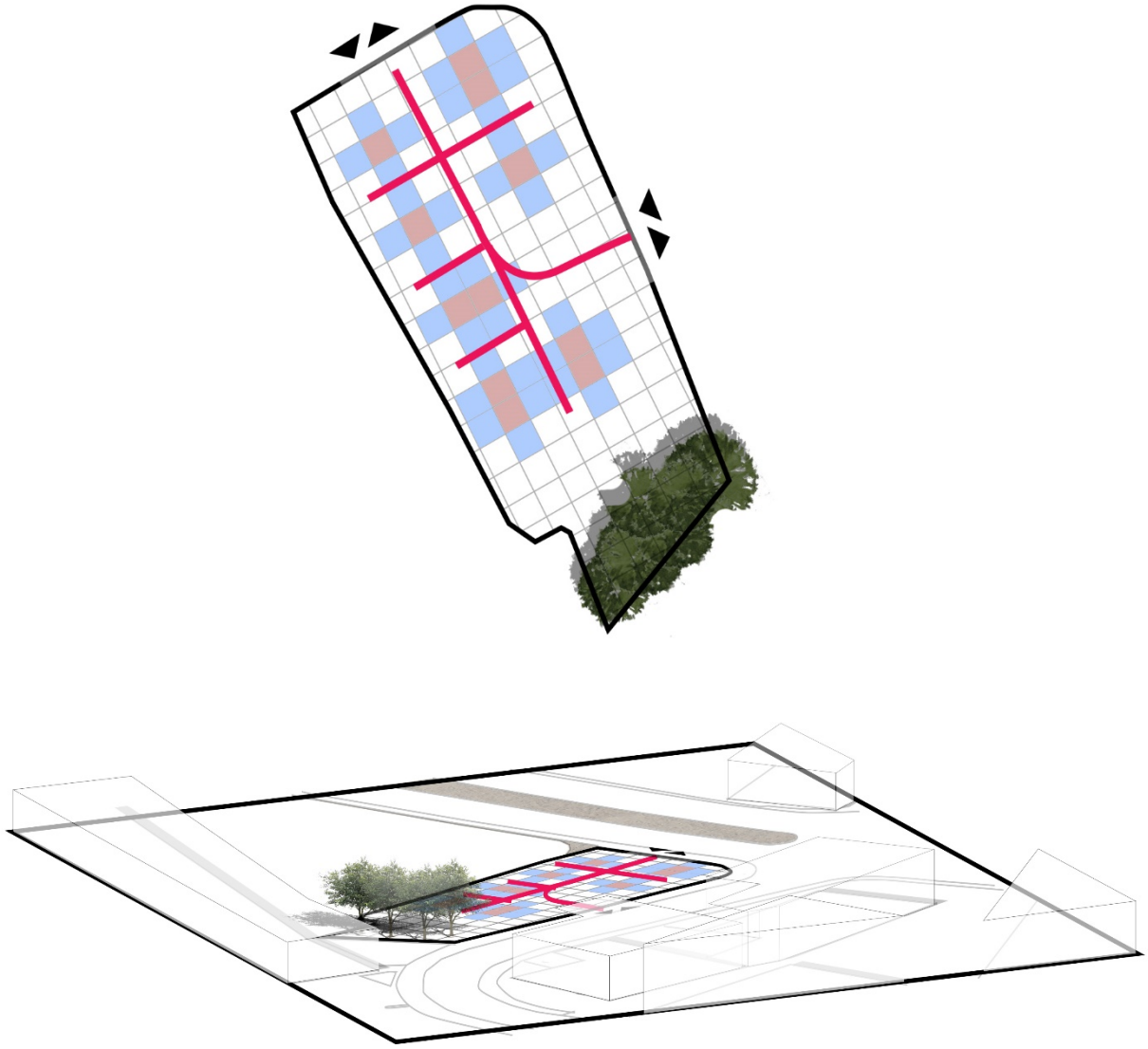


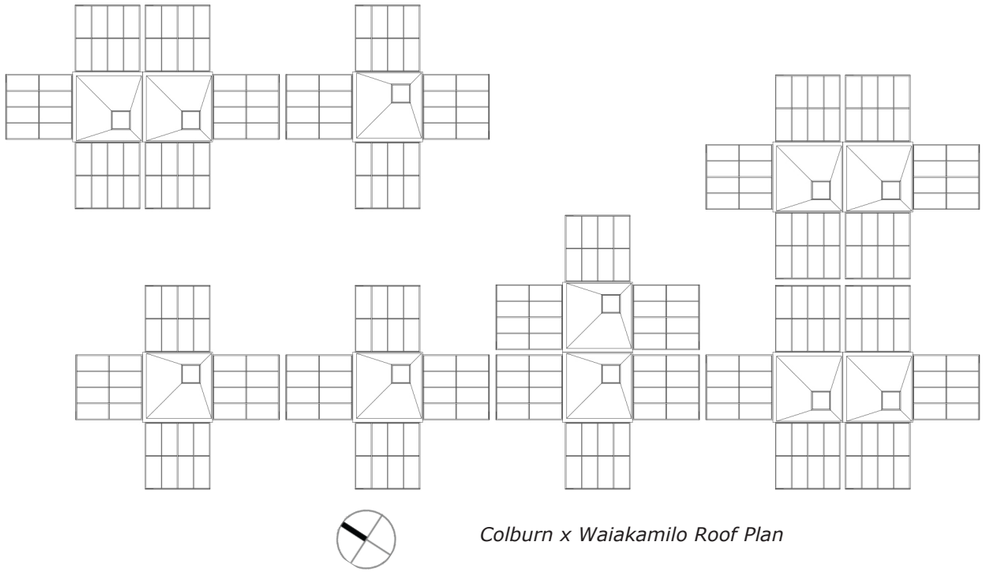
Figure 158 Colburn x Waiakamilo circulation

There are two points of access on the site, located on the Mauka and ‘Ewa ends of the site. These would be best used to create a corridor going through the site. This layout is a double-loaded access corridor with large space towards the center of the site as a gathering point or area of rest. With the module doors hinged up, portions of this circulation will be shaded.

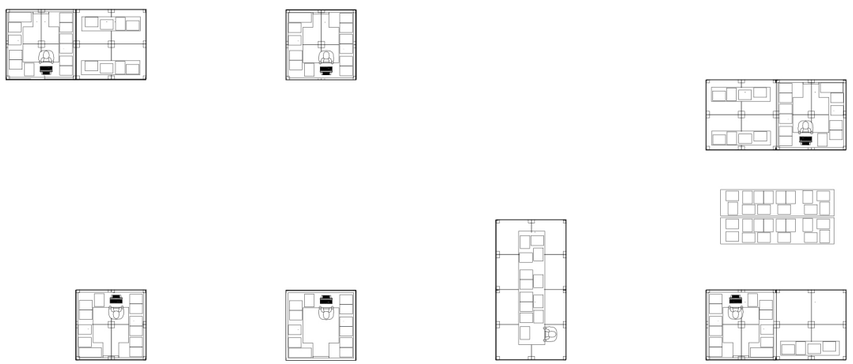
11.2.3 Colburn x Waiakamilo Conclusion

Much of the eateries in the area provide indoor seating but are much of their customers “take-out”. The hopes for this site is to not only add a number of vendors but also provide outdoor shaded seating area, in order to characterize it as a place for relaxation, despite the heavy industrial aesthetic of the area.

Colburn x Waiakamilo Site Plan



Colburn x Waiakamilo Roof Plan



Colburn x Waiakamilo Floor Plan

Colburn x Waiakamilo Elevation

Colburn x Waiakamilo Section

11.3 Kapiolani x Kona Iki

11.3.1 Site Background

The Kapiolani x Kona Iki chosen lot is the location where the future Ala Moana Center Station will be located, on the mauka edge of the Ala Moana Shopping Center. During the time before construction, the site will be unused, allowing for its iterim use.

Figure 159 Kapiolani x Kona Iki site overview

The site has already been the location for a variety of temporary functions from fireworks vendor, auto repair and dealership. As a result, receiving permission to allocate this function to the site, will be easier as there is already precedent of such occurring onsite.

Figure 160 Kapiolani x Kona Iki landowner

The main characteristic, compared to the other chosen site locations, is the number of homeless in the area, often taking refuge and shelter at storefronts once businesses close for the day. A larger number of homeless reside further south at the Ala Moana Beach Park, a short walking distance from the site. The main characteristic of the homeless population is their nomadic nature. The sweeping of tents and possessions in other areas force homeless to flock to this area. Hoping to cater to a variety of people, both the homeless and surrounding residence, the function chosen for this site is a Laundromat.

11.3.2 Final Design Considerations

Owned by Samkoo Hawaii LLC, the site is currently a large surface parking with Taste Tea located on the Diamondhead side of the lot and garage along the Makai side. Along Kapi‘olani Boulevard, there are many lower-intensity uses, including front

yard surface parking lots. The adjacent properties includes high-intensity retail and high-rise residential land uses interspersed with offices, older single-story retail, and nightclubs.

Figure 161 Kapiolani x Kona Iki Intersection[171]

With the designated function of laundromat, there exists a number of immediate requirements for the everyday operation. This includes electricity, water sources and sewer, either provided by an adjacent lot or satisfied by generators and delivered water. In this case, these resources are provided via the already existing buildings

[171] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

located on the same lot. With multiple sources of water and electricity, the number of locations for the placement of modules rises. Optimal position for intervention would be adjacent to the buildings on site, as to minimize the construction of infrastructure.

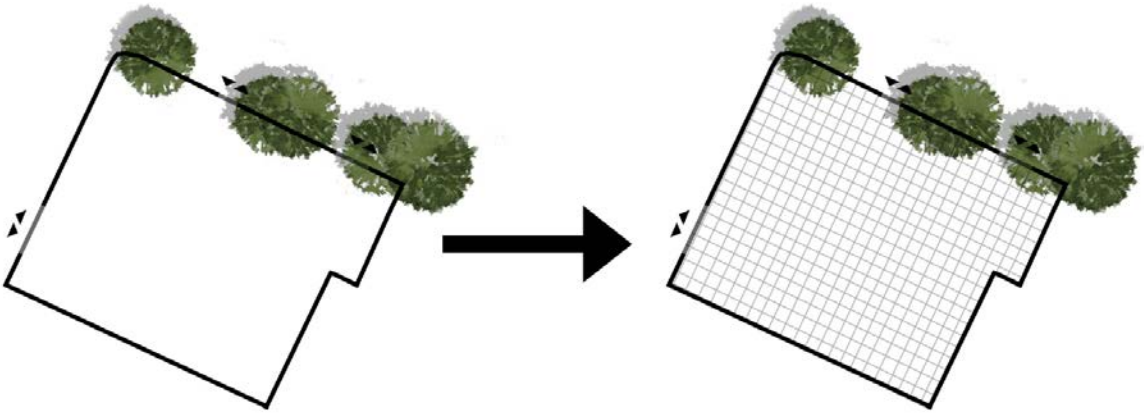


Figure 162 Kapiolani x Kona Iki grid overlay

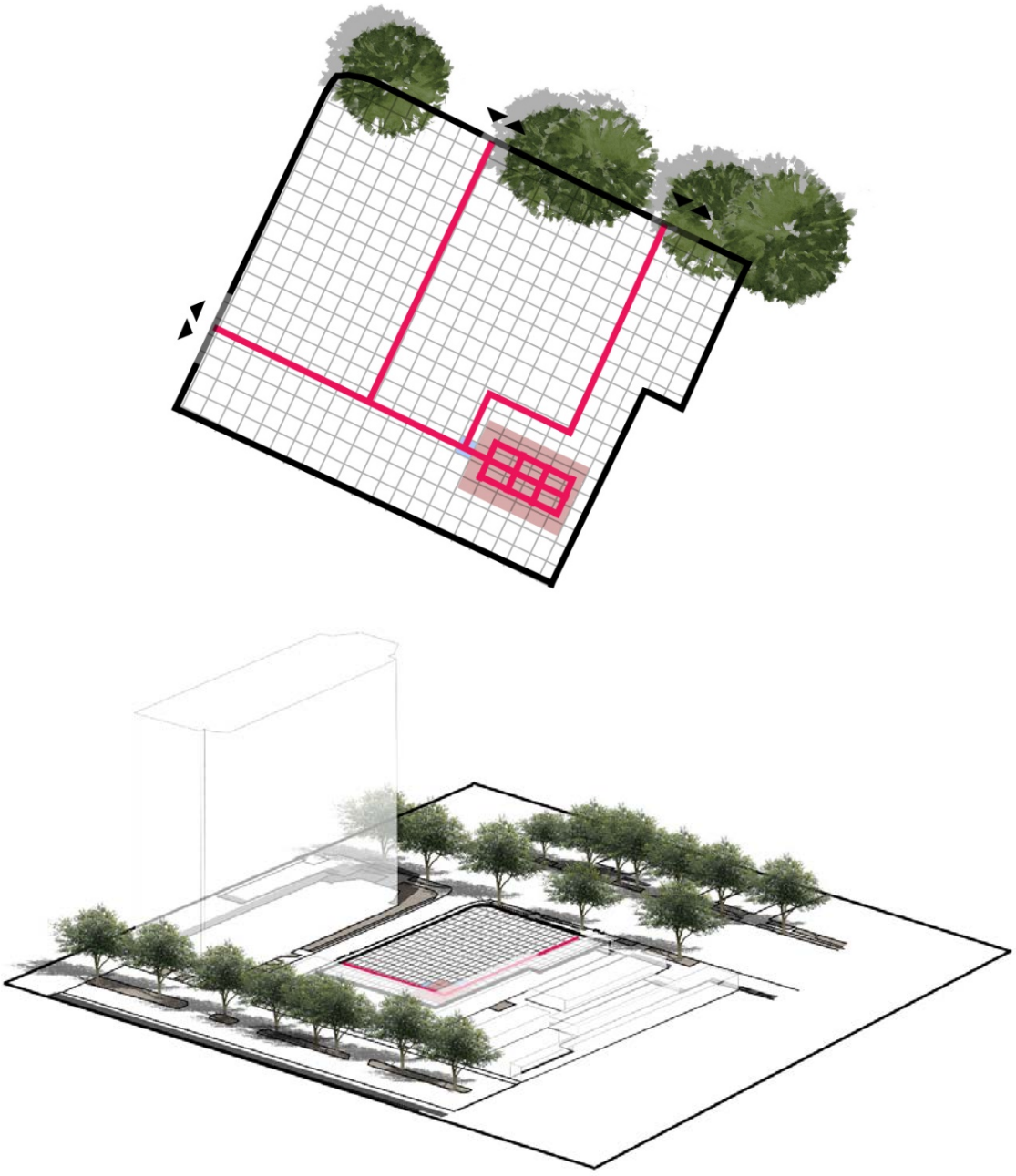


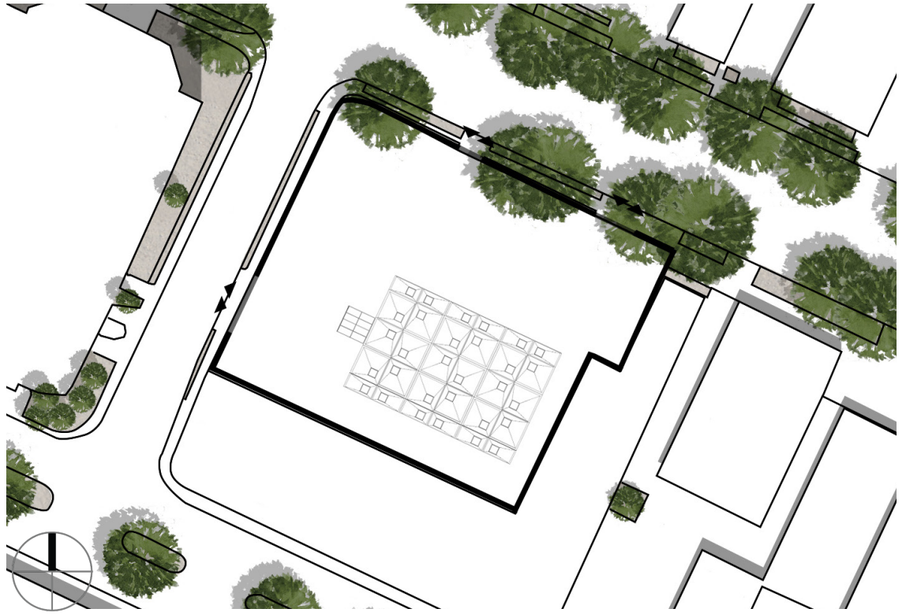
Figure 163 Kapiolani x Kona Iki site circulation

Washers and dryers may be arranged in banks or clusters. Dryers should be situated on an outside wall whenever possible for most efficient venting. With washers located on the opposite wall, a central folding area and circulation area is created in the central axis. A minimum of 6 square feet (2' x 3') of table top space is needed for one user to fold clothes. The greater the number of dryers in a room, the greater the need for folding space. It is better to have too much folding space than too little. Modules for seating are provided as there are wait times and residents in the area are predominantly senior citizens.

Laundromat as a large singular area designed to eliminate personal danger. This includes planning entry ways on main traffic patterns along with using glass walls or panels, when possible, to provide total visibility and eliminate screened areas. Water heater is located in its own module, separated from other modules.

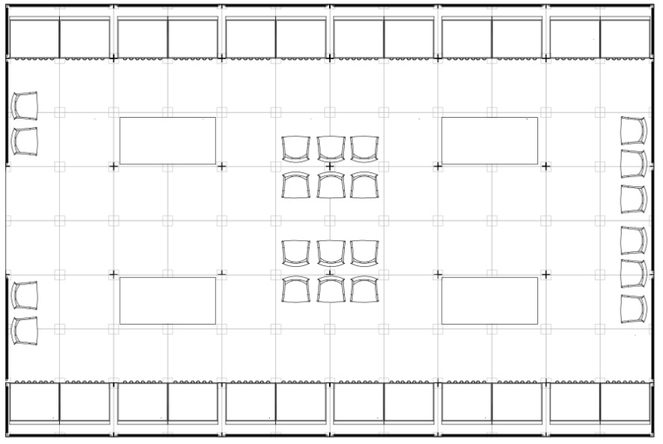
11.3.3 Kapiolani x Kona Iki Conclusion

The goal for this site and this function is to act as a catalyst for social conversation and understanding. The process and ritual of washing one's clothes comes with a waiting time. In the time it takes to finish this process, there is nothing to do but wait. These modules hope to break the social barrier by providing a place to do one's laundry but to also to get to know the people within their community.



Kapiolani x Kona Iki Site Plan

Kapiolani x Kona Iki Roof Plan



Kapiolani x Kona Iki Floor Plan

Kapiolani x Kona Iki Elevation

Kapiolani x Kona Iki Section

11.4 Kona x Pensacola

11.4.1 Site Background

Land uses in the quarter-mile area, although intense, are fairly segregated and mostly skewed toward autos a few apartment buildings in the area have smaller neighborhood-oriented shops at ground level. The Kona x Pensacola site in particular is surrounded by auto shops and industrial warehouses along the mauka, ‘Ewa and Diamond Head sides, with high-rise luxury condominiums on the Makai side.

Figure 164 Kona x Pensacola site overview

Figure 165 Kona x Pensacola Intersection[172]

[172] "Honolulu" 21.3069° N, 157.8583° W Google Earth. February 7, 2016. February 17, 2017.

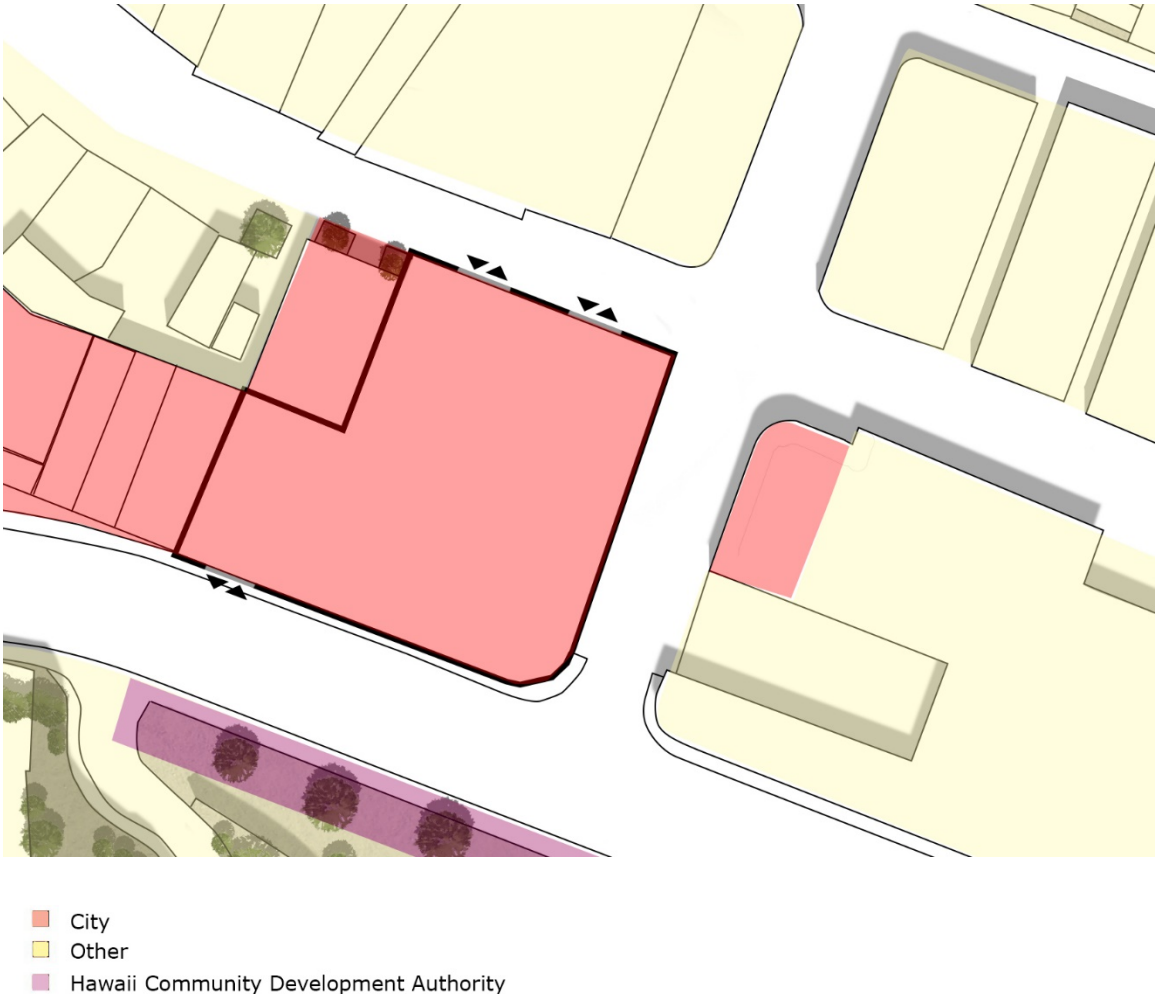


Figure 166 Kona x Pensacola landowner diagram

The parcel is currently zoned as community business, with the possibility to be re-zoned to provide flexibility for future development. The lot was purchased by the city for rail infrastructure and equipment. The rail will pass directly over this portion of the site as it makes its way from the Kakaako Station to the Ala Moana Station. Any future development will have to take in consideration access to rail infrastructure.

11.4.2 Final Design Considerations

Much like the Kapiolani x Kona Iki site, this area is in close proximity to the Ala Moana Beach Park, where a number of homeless reside. Poor health is a part of homelessness, experiencing illnesses at much higher rates. While substance abuse and mental illness often increase the risk of death, health conditions caused by poor nutrition and exposure to the elements can be equally deadly. As mentioned in previous chapters, the designated function of this site is a health clinic.

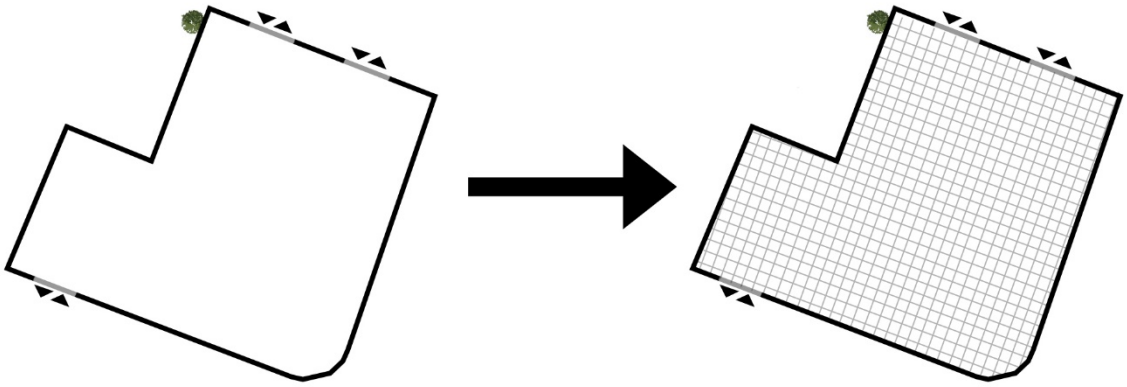


Figure 167 Kona x Pensacola grid overlay

The addition of the 7' x 7' grid to the site shows the size of the intervention in relation to the size of the parcel. This provides a number of options for the placement of modules. The modules should be located alongside the 'Ewa perimeter, nearest the adjacent two story building. The building will not only provide electricity and water, but the height of the building will provide shade for the building. Additionally, there are no sidewalks towards the mauka and Diamond Head sides of the site. As a result, the modules should be further into the site for safety, away from the major roads.

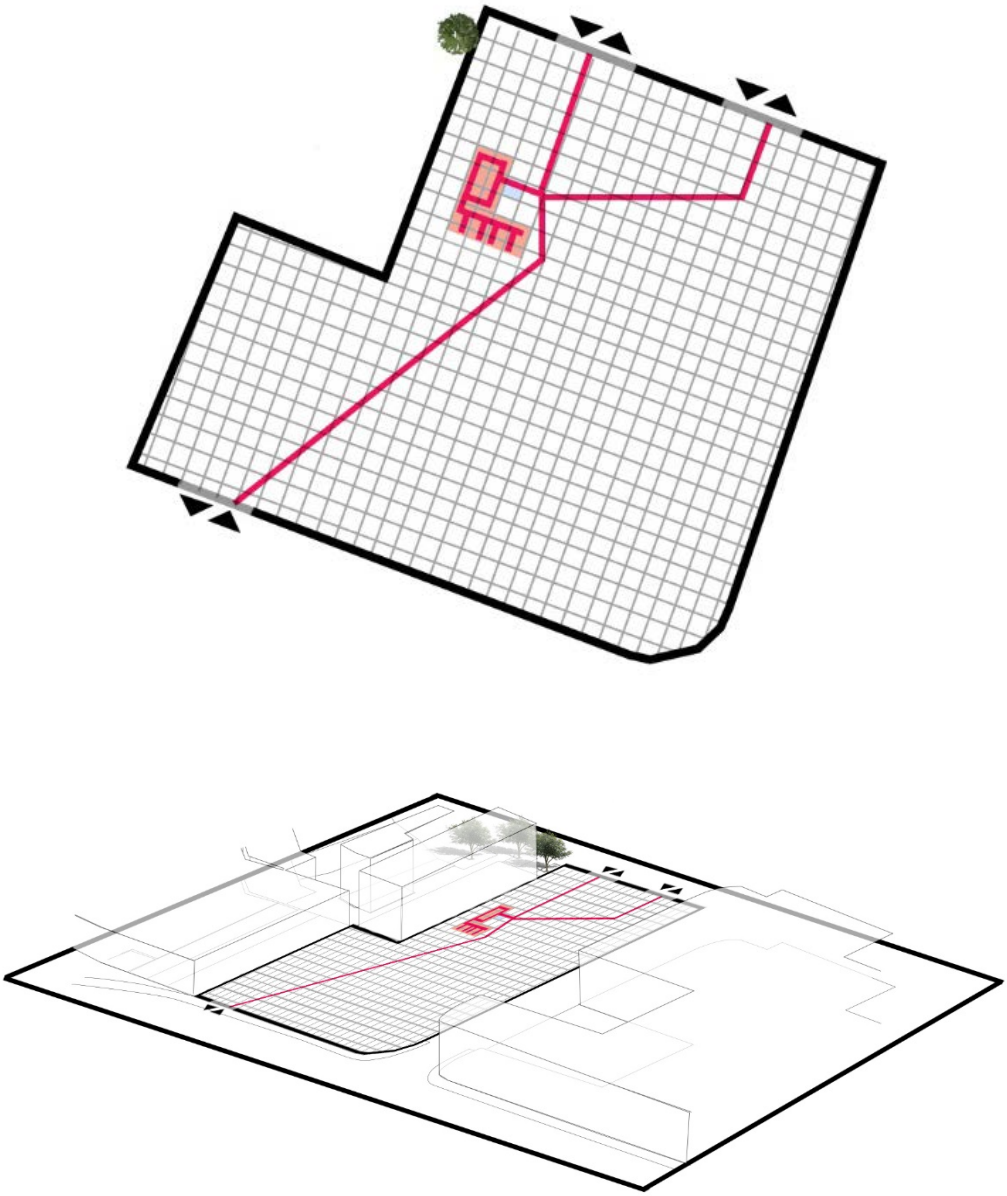
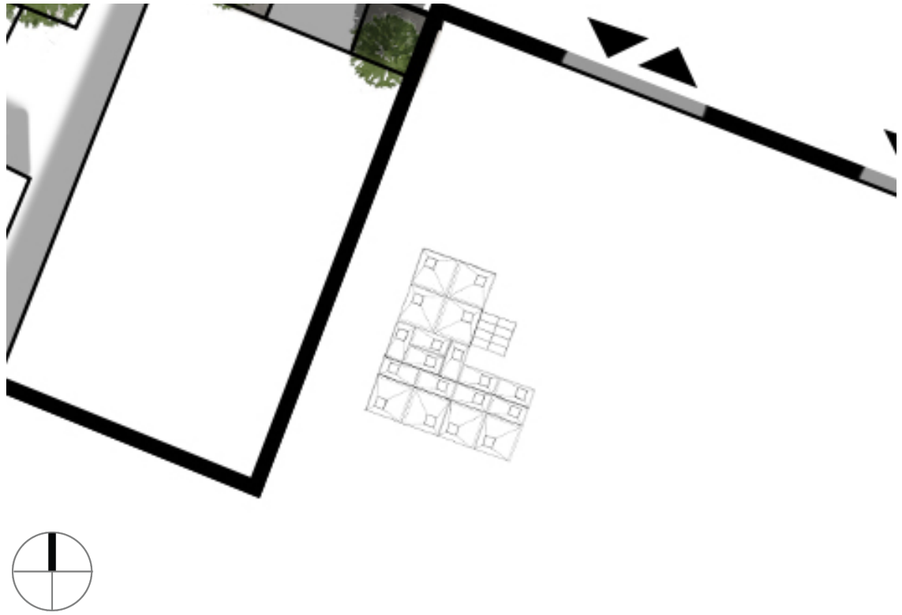


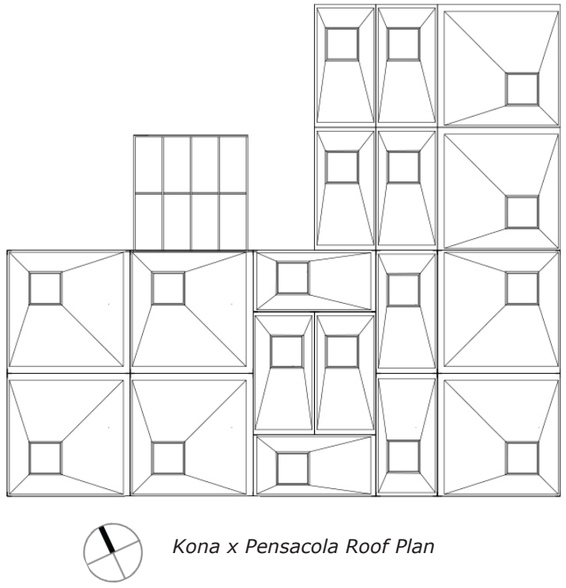
Figure 168 Kona x Pensacola circulation

11.4.3 Kona x Pensacola Conclusion

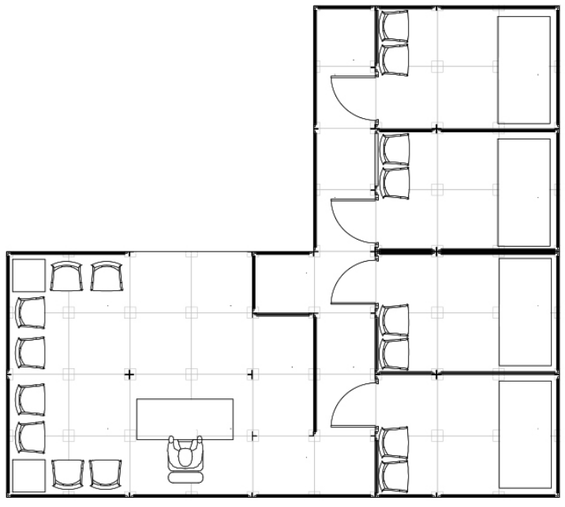
The goal for this intervention is to improve the access to healthcare for the homeless in the area and increase awareness of their needs. The health clinic would primarily act as a type of medical outreach staffed by nurse practitioners, physician assistants, or medical students. Because this is a type of community service, funding would come mainly from donations, grants and fundraising. The most common service provided be assisting with minor injuries, illnesses such as flu and cold symptoms and immunizations.



Kona x Pensacola Site Plan



Kona x Pensacola Roof Plan



Kona x Pensacola Floor Plan

Kona x Pensacola Elevation

Kona x Pensacola Section

12 Discussion of Temporary Structures in Hawaii

The proposed designs for each of the sites chosen sought to address a number of themes that remain prevalent in Hawaii. The chapters building up to the design portion presented also discussed a number of points identified to be related to the idea of temporary structures in the built environment while the design represents an applicable approach of these ideas. The following sections discuss the methods of how these temporary structures affect the social, cultural and economic aspects of Honolulu's urban fabric.

The current approach to temporary structures in current cities is hindering its effectiveness to enact change. The inflexible nature behind the politics of planning and the institutionalism or commodification of temporary projects are also diminishing the viability and value of temporary structures. The rigidity of the planning system today has narrowed the number of options to respond the changing conditions of the city. As mentioned in the theory portion of this research, the government cannot merely create elements of the city and expect them to be automatically accepted and used. People within the city lie at the center and come first before city elements. Taking a role as regulator and turning it into one of a facilitator will make temporary used more effective. Temporary use also presents opportunities for creative ideas while limiting financial risk.

The activation of urban space is an important characteristic of temporary space that not only improves the quality of the public real, but also provides an attraction the increases the critical mass of people. In this project, 'temporary use' was a way to expand people's awareness of their influence to their city, a more participatory process. This is one of the inherent natures of temporary use. Through the activation of underutilized interstitial spaces within Honolulu, temporary structures can create an increased perception of safety in areas they are deployed. When there is an appropriate critical mass of people in that area, perceptions of safety and security increase. Lack of safety is one of the main elements that discourage the use of these urban spaces and as a result, a number of homeless begin to take advantage of this unused space. The use of temporary structures in urban spaces, enhances these spaces and provides attractive areas to sit, gather and interact with other in their community. Based on the theories and precedent studies mentioned, 'temporary use'

as a tool for urban design can have significant influence on how spaces in the city are experienced and how it functions within the larger context of the city.

Temporary use, as mentioned earlier, can be used as a staging ground for experimentation, providing a host of beneficial activities such as gardening, leisure, art and music. Communities are often identified by the voices of individuals in those communities. The uniqueness of a temporary structure is what makes the project attractive to consumers when compared to chain stores. Providing spaces that allow us to gather and interact, gives opportunities for culture to evolve, which promotes community collaboration and socialization. This is only reinforced through the participatory process that 'temporary use' is involves. These temporary structures begin to transform themselves as an icon of safety, activity and interaction in their community. One of the aims this temporary structure hopes to achieve is the increase of conversation and awareness between people, hoping to create an exchange of ideas and buildings bonds with one another. This project also aims to break free from the spatial protocols and limitations put forth by our economic and political systems, which usually empowers those at the top. Everyone is invested in a number of socioeconomic rights. This includes essential basics like water and sanitation, developmental drivers such as education and healthcare, public transport, livable public life, shelter, etc. Temporary structures make it possible to empower ordinary people to figure out how best they can harness the resources they have to direct the way their community is created. Additionally, many of these communities often have limited access to resources while being in a place where it is available. These temporary structures address the issue of affordability and access by providing them the much needed resources for basic daily living.

13 Conclusion

The preceding chapters gave an overview of the characteristics of the theories and ideas involved with interstitial space and possible alternatives to the current planning process. It investigated rights the city, coined by Henri Lefebvre, tactical urbanism, interstitial space and temporality. As a whole, the goal of this project was to increase the awareness of interstitial spaces and its potential in enacting change positive change in Honolulu. In the case of Honolulu, the development due to the construction of the rail transit system will cause the amount of unused and underutilized space to increase. This represents an opportunity to experiment with the idea of temporary use in these spaces. Changing the view of what 'temporary use' is and what it can do is what this research hopes to achieve. It shouldn't be seen as a means to avoid long-term change or a bandaid for a number problems within the city. Rather, temporary projects should be used as a means to experiment with new ideas, incubating potential start-ups and business and filling the missing portions of the city.

When the built environment is not able to take over the infrastructural tasks due to large-scale redevelopment like Honolulu's rail system, sometimes politics and ideologies hinder proper establishment of functions and societal growth. By using these module units, the hope is to provide regular people the initiative to take part within their community's future development, focusing on the functions and resources that are truly and desperately needed.

Lastly, the reuse of interstitial underutilized land is truly one of the greatest challenge in contemporary urban planning that has very little means to evolve during rapid changes in the city. It is difficult to make quick changes to the regulations and restrictions of each site as all spaces are vastly different. There must be a focus on designing programs to fit their environment.

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